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ORIGINAL ARTICLES.

THE NITRITE TREATMENT IN SYPHILIS.

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THE frequent occurrence, varied character and chronicity of syphilis make it a disease that often taxes our therapeutic resources. The common and more useful remedies have their greatest potency in the early and middle stages, while the tertiary period, with its varied and indirect manifestations, we are less capable of combating. This leads us to seek means for improving the corresponding lines of treatment.

The use of the nitrites in this disease originated in two quite independent sources and with widely different objects in view. While the present article is intended to deal with only one of these methods, still, for the sake of completeness and to avoid misunderstanding, a brief notice will first be given of the other plan.

Induced apparently by certain chemical considerations which it is not necessary here to detail, Petrone of Naples essayed the subcutaneous use of nitrites in syphilis. His two cases were described under the title "Sull' uso dei nitriti nella cura delle malattie infettiva," in *Riforma Medica* for August, 1895 (v. *Giornale Italiano delle Malattie Veneree e della Pelle*, Sept., 1895). His initial dose was 5 to 10 centigrams and this was increased to a maximum of half a gram daily. It was given hypodermically in solutions of two to three per cent., a strength of five per cent. being often painful. In one of his cases there was a combination of paludism and syphilis. In this case treatment lasted thirty days. The second case was that of a woman of twenty-two years affected with hereditary syphilis. The treatment was continued twenty-six days. A complete cure was claimed. Sprecher of Turin, however, reported the following year less favorable results in his twelve cases. In his hands it only seemed to relieve osteocopic pains somewhat and caused much local discomfort.

Recently Prof. Darkschewitsch of Kasan (reported in *Neurolog. Centralbl.*, April, 1900, p. 378) related his favorable results in tabes dorsalis. He followed Petrone, injecting once a day one centigram of a one- to three-per-cent. solution of the nitrite of sodium in water (starting with the one-per-cent. and increasing). The course in each patient extended to not less than eighty injections. Under this treatment he observed the shooting pains decrease, the ataxia and weakness of the lower extremities improve, not rarely, amelioration of the symptoms in the pelvic organs, especially the bladder, and increase of the body weight. In cases of pronounced optic atrophy the papillary arteries filled up to the normal, and vision improved. Of course the usual head-manifestations of the drug were noticed.

Very likely other reports on this method have appeared, but the above references suffice to indicate the plan and the results accomplished. The expectation of that method, as claimed by its originator, is that the nitrite will act directly as a remedy in itself for the disease.

The other method of using nitrites in syphilis originated with the writer. It was first described by him in an address before the Medical Club of Brooklyn, June 24, 1895 (published in "The Normal and Pathological Circulation in the Central Nervous System," 1897, pp. 166-9, from which quotations below are taken). Before writing on the subject at all, the plan had been given careful testing at my hands and those of medical consultants. In the period that has since elapsed much additional experience has naturally been gained. The whole matter can be better presented by specifying the main facts and conclusions than by giving series of cases.

A correct understanding of the way this remedy acts in syphilis will prevent disappointments and enable us the better to secure desired results. The European view may have some warrant, but that point it is not necessary to discuss here beyond noting that in several of the cases reported abroad it is far more probable that the good obtained depended on the principle for which I contend.

My reason for resorting to this method is the widespread tendency of syphilis to cause arterial interference. This usually means a narrowing of the lumen, either from organic changes or at times by vascular spasm. The recent work of Abramow (1899) and of Berkley (1900) corroborates previous views that in these processes the muscular layer of the artery remains relatively long intact. To meet this, symptomatically at least, it was natural to have recourse to the group of vasodilators, and of these the nitrites stand at the head. My purpose was and is to have the drug act in a symptomatic manner, and not as in itself a specific cure for syphilis.

"It should be borne in mind that often the so-called specifics for syphilis will develop their desired local action only after the vessels have been dilated. When they are almost closed it is evident that little blood, and consequently little of the medicament can reach the imperiled point.

It is necessary, if possible, to open the vessel-path, and, while keeping it open, follow up with the more direct specifics. . . . We all know that at times an undoubtedly syphilitic process fails to respond well to treatment. Some of these cases can be reached by this plan, and very many by a less amount of specific than otherwise."

The method employed by me aims first to secure the temporary safety of the patient where there is immediate danger, and then more widely as a means by which to get better results from routine specifics. "For this purpose the hypodermic use is unsuited. Prolonged action without untoward effects is that here desired." The hypodermic use masses the drug's effect, but correspondingly shortens its action. We want it, on the contrary, as nearly continuous as possible. Hence the more volatile and fleeting preparations like nitrite of amyl are of limited value, and in only a less degree does this hold for nitroglycerin.

My earliest and greatest experience with this means has been in cases of syphilitic disease of the brain arteries. In many of these cases it is perfectly practicable to make a diagnosis, even so far at times as to approximate the vessel or vessels chiefly involved. Most often doubtless it is the Sylvian or its branches or the basilar. But the main thing therapeutically in such cases is to determine the nature of the process affecting our patient, the exact vessel being immaterial except in so far as it may help to insure the general diagnosis. There are nearly always prodromal warnings. Where these are not heeded we know but too well the danger of complete blocking and irreparable necrosis in the threatened brain area. The immediate results obtained here by the use of nitrite are strikingly satisfactory to patient and physician. Threatening symptoms are promptly relieved, the case loses its emergency aspect, and we can proceed more deliberately with the treatment.

Somewhat allied to this type are those cases of depression melancholias and even suicidal tendencies that are evidently syphilitic in origin (not, of course, including the syphilophobics). Here the buoying qualities of the nitrites are very marked, and will sometimes be life-saving.

By degrees a variety of cases, either somewhat different in character or in other parts of the body, but involving like principles, have come under notice. These serve to more clearly establish the method and extend its scope.

In the so-called parasyphilitic changes, when once well developed, the nitrites are not of great use. Still, as the vascular element plays quite a part in their development, much assistance can be gained by the employment of this agent in all the initial and early stages.

So also in the early stages of progressive dementia nitrites often form a very useful adjunct. They meet a natural indication in this trouble independent of its specific or non-specific origin. The good effects are, however, temporary unless enforced by hydriodic acid, brucine and other aids. Still, as a whole the nitrites perceptibly improve the poor therapeutics of incipient or developing paresis. In some cases we seem able with this additional help, to arrest its progress, and even the physical signs may largely abate. Inasmuch as this disease is pathologically of vascular origin it is easy to see that it might be specially influenced by nitrites. Rare cases have been described where paresis has been most favorably influenced by trephining, blistering of the scalp, or inflammations about the head. It is evident that these must have acted largely through the vascular arrangements. In the nitrites we have an agent acting in the same sense and that can be perfectly regulated in dosage.

On the diabetes (glycosuria) of old syphilitics this agent has repeatedly shown its value. In one case seen last spring with Dr. H. C. McLean, this plan, including the subsequent free use of iodide, led to the entire disappearance of this symptom.

Of spinal disorders the one where it has proven particularly useful is the rather common spastic form of spinal syphilis described by Erb (*Neurologisches Centralblatt*, March 15, 1892). He did not determine its anatomical basis although suggesting an affection of vascular territories, and I am not aware that anything definite is known on that point. It is certain, however, that the nitrites aid materially in handling it, although this is otherwise, next to gumma, the most amenable form of spinal syphilis. Very likely it depends on spinal arteritis and hence the good effects obtained from nitrites.

It is possible that the once favorite use of nitrate of silver in tabes depended for any good it may have done upon the slight nitric element rather than upon the silver. At the same time it has not been my good fortune to see any very striking results from the nitrites in this affection, although in some cases useful, and in every case worth trying.

In gumma of the brain or cord nitrites help materially to get the desired rapid action of mercury and iodides.

Specific troubles outside the central nervous system, especially when accompanied by pain, may be thus favorably influenced. For instance, in the recent case of a young man with known hereditary taint, the symptoms of a sharp first attack of appendicitis yielded readily to this means after complete failure of the ordinary remedies.

The nitrites are indicated in all syphilitic disease of the arteries, as a rule in all specific affections attended by pain, in all syphilitic brain troubles, and especially in the later and hereditary forms of syphilitic disorder (cerebral, spinal, peripheral). This lumps clinical indications rather than differentiates them, but for present and practical purposes it may suffice. *With these indications goes the mandate to immediately employ such other and more directly*

specific agents as the case demands. The title of this paper is intentionally made Use *in* Syphilis, not *for* Syphilis. It is understood that the glycerin and erythrol preparations are nitrates. But it is what is known physiologically as the nitrite action that is developed and hence that term is used in this article.

Administration.—In the use of the nitrites certain by-effects, in general unpleasant, are met with more or less frequently. The frontal pressure, fulness of the head and even headache are presumably inherent, if we succeed in getting the desired physiological action, no matter which preparation is employed, and hence we may not expect in any way to materially avoid them. Whether the drug acts quickly or slowly so long as it acts forcibly these secondary effects must be expected. A certain tolerance usually develops, possibly the expression of systemic accommodation. In the case of the rapidly-acting nitroglycerin, the head-manifestations may be more sudden and transient, but the difference is only one of degree.

Not so, however, in the case of the peculiar gastric discomforts that soon become intolerable to many patients. These are evidently due to the decomposition of the nitrite in the stomach. The nitrite of amyl need not be considered, as its action is too evanescent. Of the other preparations, nitroglycerin alone possesses in my experience practical freedom from this objection (due presumably to the fact that it goes unaltered into the circulation). For that reason this preparation is, for any prolonged periods, the one we are often compelled to employ. Nitrite of sodium may be tried at the start and in rare cases continued some time. Usually, however, the complaints are soon so urgent that a change has to be made. Some of my colleagues using these preparations find less complaint against them.

Since the more general accessibility of the tetranitrate of erythrol I have made considerable use of it. Possibly the gastric complaints are somewhat less or more delayed than in the case of the sodium salt, but there is no great difference in the two on this point. Lethargic and stuporous individuals can sometimes continue it awhile. The employment of this preparation is based on the results obtained by Bradbury (*Lancet*, 1895, II, pp. 1205-1213) who showed that its peculiar nitrite properties are slower and more lasting in their effect, beginning in half an hour and continuing several hours. He recommends doses of a grain or more, given either in solid form or dissolved in alcohol. In my work doses of half a grain are quite sufficient at the start, and even that amount may soon be complained of. I find that clinically, as was shown by Bradbury experimentally, it does not cumulatively lose its effect, as is the case with nitroglycerin. Its slower action is its other most desirable quality.

The desideratum at present is some vasodilator at least as slow and prolonged in its action as the erythrol salt, and at the same time as free from gastric disturbance as is the glycerin preparation. Doubtless some of our chemists or workers will find an article free from drawbacks, or perhaps some combination in administration that will prevent this without invalidating effectivity. Meanwhile, although we can begin with one of the sugar combinations (mannitol nitrate having also been recommended) or the nitrite of sodium, we shall usually have to fall back on nitroglycerin for prolonged use, despite its lack of needed staying qualities. Occasionally we need at the start a very prompt agent, and then of course nitroglycerin is just in place.

The method of administration is also of importance. For my plan the hypodermic use is quite unsuited. That only makes the action of the nitrite the more temporary, and leaves the course of events unaffected until the next dose. It is moreover often painful, but that is not the essential objection. As nearly a continuous action as possible is what is in order and for that purpose administration by the mouth answers best. One to two grains of sodium salt are usually sufficient, at least for the earlier doses.

All of these agents are highly explosive if improperly handled. This should be borne in mind in making combinations, a practice not to be recommended when dealing with the nitrites. The sodium salt should be given in solution, while the sugar preparation is available in tablet form.

THE FAILURE OF THE CONSENSUS JUDGMENT WITH REFERENCE TO TUBERCULOSIS.

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It has been a custom with many physicians to send out circulars of questions to the profession expecting through the opinions thus obtained to aggregate average results. But the majority vote settles nothing in the scientific investigation of undetermined conditions, except to show that the greater number of minds are working in the same groove, and the decision of many of those who do give an opinion is influenced more by the confidence they happen to have in the judgment of another than by any knowledge they have gained through personal investigation.

As to tuberculosis there is unanimity enough in the medical profession, such as it is. But this unanimity reminds one of a band of antelope beguiled by the wily hunter to investigate his red bandanna suspended on his ramrod near his hiding-place. We need more originality in method and independence in investigation in order to solve this tuberculosis problem. Tuberculosis congresses are assembled, symposiums on sanatorium[1] and other methods of treatment are held,

[1] The word *sanatorium* is here used to mean a "closed" institution for the treatment of invalids, in contradistinction to *sanitarium*—a health station or health resort.

and the ways of limiting and destroying the germ are discussed. Old "saws" are refiled, backed by the agreement of a multitude of witnesses, but we do not seem to get very much nearer the root of the matter.

Some twenty-seven years ago I thought I had discovered the way to solve the problem. I undertook to get the consensus of the experience of 3500 carefully selected physicians representing the whole United States upon the subjects of inheritance and climatic treatment The causative conditions and after-longevity of consumptives of different varieties, ages and stages of disease were to be determined for bad, medium and good climates. Then even life insurance companies could calculate their income savings through the change of residence of their invalidated insured. The replies to this circular of fifty questions were generous and interesting. But Professor Lusk of New York wrote, after spending half a day giving his own answers, that he would give more for an individual opinion than he would for the combined answers of the whole medical profession. This was a discouraging criticism of the consensus method. Its wisdom, however, was verified by the necessity to practically abandon the original plan, because of the neutralization of the evident good work of some reporters by the unreliable, indefinite and questionable experience of their confrères, or of those from other quarters.

Just now the prevailing opinion among medical men appears to be in favor of home management and the local hospital treatment of tuberculosis, and every consideration seems to hinge on infection as its cause. My reasons for opposing this consensus judgment are as follows: (1) There is a decided advantage in climatic change over the home or the local sanitorium treatment, and (2) the germ origin of tuberculosis is not the sole cause of the disease, and so is not a sufficient foundation for either its educational or legislative control.

1. There never has been found anything more potent for actual cure than a seasonable and decided change of residence and occupation, involving, as it does, getting away from the whole of the previous environment, which, more than anything else, has originated the disease. The failure to recognize and to be guided by this truth can be reasonably attributed to the faulty consensus idea which discredits known climatic results. There is probably more variation and uncertainty in mechanical appliances and ability to diagnose the incipiency of tuberculosis than pertains in any other branch of diagnosis and therapeutics. Yet the nearer we can get to the obscure or possibly undetermined etiological factors of the disease the better can we forestall the future. Every form of treatment put forward is, of course, more successful in the incipiency of tuberculosis than when the disease is advanced. Far be it from my purpose to disparage system in management and segregation of the affected poor under proved methods of treatment in well-equipped sanatoria or hospital homes, especially if located in the most favorably situated parts of our great country. But the consensus of medical opinion does not seem to recognize the inadequacy of the consumptive hospital plan near eastern cities for the great task before us. Some sanatoria for consumptives are in a measure successful, because of two fortunate circumstances, (*a*) the men in charge of them are gifted with the requisite genius and enthusiasm, and (*b*) a practically outdoor mode of life is insisted upon as a principal factor in the régime.

The preference for high altitudes to which we, who have had experience in Colorado, are wedded rests upon our personal knowledge of remarkable results. We believe these results could not or would not occur under other and low altitude conditions, except as a rarity. Yet if we were to average the whole profession's opinion on this point we would be outvoted by those who imperfectly understand and who poorly appreciate the chief factor of our climate, *vis.*, the physical effect of the rarified air upon the lungs and heart—the pulmonary air and blood circulation. That the inactive, sedative and confined life in the lowlands has its counterpart, proportioned to the rarefaction of the air, in the active, stimulating and open life of our interior altitudes, is a plain proposition which seems to be poorly understood by the majority. They have "heard tell," but they do not see it clearly that the periphery of the body is somewhat congested in high altitudes, due to the crowding of the greater amount of air breathed into the pulmonary spaces, aided by the less pressure of the atmosphere on the surface of the body. That there is always a reciprocal relation between the blood in the thorax and the air in the lungs does not seem easy to understand according to the reasoning of the advocates of the rest cure, which seems to be the favorite method with the majority of physicians. We are, or seem to be, under a spell of uncertainty, if not of fear—a practical acknowledgment of our inability to properly cope with this lethargic disease. Since the evidence of cures, by whatever method or climatic change procured, is so generally believed to be confined to the incipiency or "first stages" of the disease, let me suggest a test suited to this period. It is recommended for the consideration of those gentlemen who come in contact with large numbers of consumptives in their capacities as organizers or governors of proposed sanatoria for large cities in the East. The trial I suggest would not only be of incalculable value to these men in the management of their institutions, but the preeminent superiority of an outdoor life in our high altitudes would thus be settled.

A Suggested Outdoor Life for Incipient Consumptives.—Let these gentlemen choose or have selected by careful physical examinations one

tenth of any 500 or 1000 consumptives who came under their notice. This choice is to be based upon the fitness of these supposedly tuberculous persons for the active outdoor life proposed, and limited to those who are on the favorable side of the breaking-down period in pulmonary tuberculosis. These 50 or 100 invalids, preferably young men, are to be under the care and control of a selected physician. If he also needs this kind of life it would not greatly matter, provided he had the initiative and enthusiasm to make his mission a success. Then a hospital-tent with one or more spring-wagons, for transporting invalidated members, should also be provided; also a commissary and cook and sufficient aid to have the party live well; also a large mess-tent which should give shelter in case of storms, and freight teams for carrying same and each one's individual luggage. Other tents might also be provided, but the main idea would be to have these young men sleep out in the open nearly all the year round. In order to do this safely I would recommend each man to have an "outfit" such as the cowboys have on the large cattle ranches in the Pan Handle of Texas.[1]

Such a movable camp could outfit from one of the cities at the eastern base of the Rocky Mountains in Colorado, and start out, say in June, expecting by easy stages, ten to twenty-five miles a day when on the move, and by prolonged campings at desirable places, to reach some southern point, as, for instance, the south slope of the mountains north of Tucson, Arizona, by the first of December. Here a winter camp for three or four months might be provided with added provisions, perhaps temporary cabins, to meet the season's requirements. After this a return north by a new route could be undertaken, including unfrequented and interesting sections of western Colorado, with the object of disbanding, say in Denver or thereabouts, the following October or November. Now, under a right personal and financial organization, and a careful and conscientious choice of invalids to make up such a party of 50 to 100, I believe the results would be better than could be produced by any other at present known system or method of treatment. From the workings of such a plan it would not be difficult to conceive how changes could be made, so that it would be possible to include the care of the more seriously ill, even to the extent of having nurses along. Again, permanent camps or ranches might be established in connection with gardening, cattle- and sheep-raising. For instance, three camps five to fifteen miles from each other might be established at different elevations to suit the winter, spring and fall, and midsummer seasons; the tents with board floors being moved from one to the other. Thus, an elevation of two to four thousand feet higher in summer than in winter could be secured. Such places, having the additional advantage of fine exposure and good water, could be found in New Mexico and Arizona, where considerable tracts of land could probably be bought very reasonably for this purpose, but these suggestions are diversions from the main object of this paper.

2. The other difficulty we have to contend with in eradicating tuberculosis is the fact of the consensus of judgment among medical men hovering so closely around the germ cause that the predisposing conditions (without which the disease could not exist) go undetected and the greatest possible success cannot be obtained. In my paper upon "The Degenerative Results of Deficient Ventilation,"[1] read at the last meeting of the American Climatological Association, I have so fully worked out the proof that we as a people are living upon a deficient ventilation curve, and that this defect in our civilization is at the bottom of our prevalent tissue degeneration and tuberculous tendency, that I may be pardoned for referring thereto for the detailed argument. The conclusion therein reached was that the healthful respirability of the air depends upon its not having been previously breathed or shut off from the revivifying influence of the sun. In other words, that the electrifying, purifying and motion-producing influence of the sun cannot be shut out from the air we breathe without a resultant vitiating effect upon the blood and tissues, in the lungs especially. Thus, the air is rendered unfit for respiration, and here is the main source of the dyscrasia or degeneration which makes the destructive activity of the germ possible. Therefore this prime evil of our civilization, the faulty construction and deficient ventilation of our animal as well as our human abodes, must enter into our calculation for the successful prevention or eradication of this disease. The necessity for this reform forces to the front the educational needs of a people so ignorant and careless, so rooted to evil habits of living, that they cannot see that there is anything wrong in our "civilized" mode of life. The need of legislation is also made plain to the end that the crowding of people into large cities may be better controlled. Legislation is needed also in order that in all new buildings, to be constructed hereafter, a more generous allotment of space may be provided per human inhabitant

[1] A "tarpaulin," which is a piece of heavy 10-ounce duck or tent cloth, 7 ft. wide and 17 ft. long; three or four warm woolen double blankets, or two blankets and two comforters ("Suggins"); a "slicker," a long rubber-cloth overcoat, cowboy hat, boots, etc.; if they can afford it each one should have his own saddle-pony, saddle and accoutrements; a half dozen rifles; a half dozen shotguns and a dozen fishing-rods, together with other accompaniments for outdoor sports and games could be added. This sleeping on the ground can be done very comfortably whether one bunks alone or combines his blankets with another's to make a double bed. In either case the blankets and comforters with tarpaulin outside can be so folded as to give a comparatively soft bed in the form of a sleeping-bag. In this the camper is covered with the soft blankets next the body, the comforters and some of the blankets underneath and the tarpaulin underneath and above all. This canvas sheet is stiff enough (especially when wet) not only to shed water, but to hold its tent-shaped position when punched up above the head. This for sleeping purposes is getting down about as near to Nature as possible, and is quite feasible and possible, at least for three-fourths of the year in this dry western country.

[1] Journal of Tuberculosis, July, 1900, and Journal of the American Medical Association, July 14, 1900.

than the former average of 1000 cubic feet, obtaining in some sections, and for milch cows 400 cubic feet, roughly estimated, as the prevailing average where tuberculosis exists among them. According to investigators who have made a special study of this subject, twice the area named, and that, too, renewed every hour, is the minimum limit for healthful living.

Yet this basic argument, this causation, which apparently alone explains the great prevalence of tuberculosis alike among animals and man, is practically nullified by the consensus of opinion of the medical profession which gravitates back, "as duck to water," to the bacillary infection as the beginning and the "whole thing" of this disease. It is now "up to" tuberculosis conventions and boards of health to see and to prove how destroying the results of this disease, through disinfection and laws prohibiting or controlling expectoration, is going to eradicate or even greatly lessen the prevalence of this disease itself.

If time and a reasonable limit of this paper permitted I would add other evidence why the consensus of judgment of medical men can settle aright no investigation which has a loophole of doubt in it. The consensus is always a compromise, and a compromise is never the whole truth. The result is a practical failure so far as a conclusive solution of the question in hand is concerned. But, like the lighthouse along a rocky and uncertain coast, the attention thus drawn to the failure of the consensus judgment may lead some one else to take the right course, and the harbor of truth will eventually be reached.

THE VALUE OF THE SCHUMBURG METHOD OF PURIFICATION OF WATER FOR MILITARY PURPOSES.[1]

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In March, 1897, Schumburg announced as the result of a year's laboratory work that of the many chemical disinfectants he had tested for use with drinking water bromine gave the only success. He reported that 0.06 gram of bromine kills the pathogenic bacteria in one liter of water in five minutes, and that then the bromine can be neutralized by ammonia so that a clear, tasteless and odorless water results. Resisting forms of non-pathogenic bacteria are not killed, and very hard, extremely dirty, and swamp water neutralize part of the bromine by the lime or the ammoniacal salts contained, and with such waters more bromine must be added even to the point of giving a yellowish color to the water for half a minute. The amount of bromine made by neutralizing the usual amount of bromine is only two or three grains to the liter, an amount too small to give a notable taste to the water or to effect the health of one taking it. Subsequent papers elaborated the technic of the method. Schumburg found that the bromine is best handled in a potassium bromide solution and recommended the following: ℞ Kalii bromidi, 20.00; bromi, 21.91; aquæ q. s. ad 100.00; for the bromine and for the neutralization tablets each containing sodii sulphitis, .095; sodii carb, exsic., .040; mannit q. s. Of the solution 1/5 c.c. is sufficient for one liter and is neutralized by one tablet.

Schumburg gave no experiments to support his statements but in January, 1900, Pfuhl reported in detail a series of confirming experiments. He tried water from various sources, river, pond and meadow, and added to these waters pure cultures of the cholera spirillum, the typhoid bacillus, and the staphylococcus pyogenes aureus. In certain experiments the cultures were not entirely destroyed, but in every such instance Pfuhl attributed the failure to the unusual severity of the test and to the insufficient amount of bromine employed. He noted that it is necessary for the bromine to be well mixed by stirring with the water, that the neutralizing salts should be dissolved in water freed from infection before they are added, that when the composition of the water to be tested is unknown it is safer to add sufficient bromine to give the water a yellow color for two or three minutes, and that as the bromine solution diminishes in strength very rapidly after the containing vessel is opened it is necessary after five minutes to increase the amount of solution used. The bromine method is practically useless when the water contains fecal matter in large enough amount to cause color, turbidity or foul smell; in other words, in conditions in which the water would naturally be rejected without question.

Such claims for a practical method of disinfection surely merit investigation, and a number of experiments with the bromine solution have therefore been performed by the writer. For part of these experiments cultures of the typhoid bacillus have been used from three sources; one was received from Pfeiffer in 1896 which had been continued in his laboratory for some years; one was isolated from well water in 1896, and the third was isolated from the feces of a typhoid patient in the fall of 1899. After it was found, however, that there was no difference in the way these reacted to the disinfectant, only the third culture was used. As the cholera spirillum had apparently been quite thoroughly tested by Pfuhl, and as it had appeared less resistant to bromine than the typhoid bacillus, it was not used in these experiments. Its place was taken by a culture of the bacillus coli communis. In all cases a forty-eight-hour culture was used; generally an agar culture was mixed with water and some cubic centimeters of this mixture were added to the water to be tested, but in a few instances a cubic centimeter of a bouillon culture was used instead.

[1] Read at the annual meeting of the Association of Military Surgeons of the United States, New York, 1900.

In the early experiments one cubic centimeter of the water under examination was taken for a test, added to a tube of melted agar, plated in a Petri dish, and placed in an incubator at 37° C. for forty-eight hours. In case no growth was apparent twenty-four hours more were allowed to elapse before the plate was rejected. As it was later found that bromine has but slight effect on the usual saprophytes, large numbers of colonies of spore-bearing bacilli often being found in the media, and as it was feared that a few colonies of typhoid might escape notice, recourse was had to the Hiss tube media. Stick cultures were made from the suspected water and controls from the typhoid culture employed. If the medium was not clouded at the end of twenty-four hours it was inferred that the typhoid bacillus was absent. In a few instances the Hiss plate medium was also used. Coli plates were controlled in like manner by planting colonies and in some instances a cubic centimeter of the water in fermentation tubes. If no gas appeared it was inferred that the bacillus coli communis was certainly absent; if gas developed at least one of the colon group was probably present.

Water from three sources was used: Croton water drawn from the tap in the laboratory, Albany water taken from the Hudson River, and stagnant water taken from a pool which had been standing some weeks in a city lot in Harlem. Sterile Croton water mixed with fresh urine in varying proportions was also used for the experiments. The three waters were examined for their hardness, and it was found that the Albany water was represented by 3.9 grains of calcium carbonate to the imperial gallon, the Croton water by 7.7 grains, and the stagnant water by 11 grains. The Croton water contains .0030 parts of free ammonia and .0170 parts of albumenoid ammonia to 100,000 parts of water and the corresponding figures for the stagnant water were found to be .0298 parts of free ammonia and .0183 parts of albumenoid ammonia. In other words, the stagnant water was very hard, contained a large amount of ammonia, and would have been rejected immediately for drinking water even if it had not had in addition a notably bad odor.

The time of exposure of the water to the bromine varied in the different experiments from five to seven and a half minutes.

In the first series of 25 experiments the variants especially observed were the different cultures of typhoid and the varying amounts of bromine solution. In every case 500 c.c. of Croton water was used, and the bromine solution was so diluted that 10 c.c. of the dilution represented 1/5 c.c. of the original mixture.

In specimen No. 1 the water was filtered through porcelain; in No. 2 it was boiled and exposed; these two served as controls. Nos. 3 to 17, inclusive, were simply filtered; Nos. 18 to 25 were boiled and exposed. To all of these save Nos. 16, 17, 18, 19 and 20, in which bacillus coli communis was used, typhoid bacilli derived from three sources were added. To Nos. 7 to 25 bromine solution in amounts varying from 1/10 to 1/5 c.c. was added. They were then all plated on agar with the following results. Those samples of filtered water and of boiled and exposed water to which no bromine had been added showed the presence of innumerable colonies of the organism planted. The rest of the filtered water to which the bromine had been added showed no growths; in all of the specimens of boiled and exposed water, notwithstanding the addition of the bromine, a few saprophytes grew, but no colonies of either typhoid or coli were found.

It was inferred that none of the cultures of typhoid employed offered unusual resistance and that for ordinary drinking water the minimum amount of bromine solution proposed by Schumburg is sufficient to disinfect typhoid and coli while the ordinary air bacteria may be much more resistant.

In the second series other waters were used and the bromine solution was weaker. The solution had been kept for some time in a glass stoppered bottle, but the odor of bromine showed that some had escaped, though unfortunately no analysis was made to determine the loss. As before the bromine was diluted so that 10 c.c. were the equivalent of 1/5 c.c. of the original.

TABLE I.

No. of Experiment.	Water.	Preparation.	Amt. in c.c.	Ty. Pfeiffer added.	Ty. 138 added.	B. col. com. added.	c.c. Br. sol. added. 10=1/5 c. c. orig. sol. (?)	Culture Medium.	Result.	Remarks.
1	Albany	None	100	..	..	..	0	Agar	S many	Control
2	"	"	"	..	..	..	1	"	S fewer.	"
3	Stagnant	"	"	..	..	..	0	"	S Immense Number	"
4	"	"	"	..	..	..	1	"	S "	"
5	Albany	"	"	+	..	..	0	"	S + T +	"
6	"	"	"	..	+	..	0	"	S + T +	"
7	"	"	"	..	..	+	0	"	S + C +	"
8	"	"	"	+	..	..	10 kept yellow 5 min.	"	S + T o	60 Col
9	"	"	"	..	..	+	" "	"	S + C o	37 Col
10	Stagnant	"	"	..	+	..	" "	"	S + T o	1 Col
11	"	"	"	..	..	..	" "	"	S + C o	25 Col

NOTE.—S—saprophyte; T—typhoid; C—coli.

It was apparent that a larger amount of a more dilute solution of bromine is an efficient germicide; and it was clear that some means must be adopted to determine positively the presence or absence of a few colonies of typhoid and coli. In the next series, therefore, the Hiss tube media for the determination of typhoid and fermentation tubes for the determination of coli were adopted. The bromine solution was diluted so that 50 c.c. were the equivalent of 1/5 c.c. of the original.

TABLE II.

No. of Experiment.	Water.	Preparation.	Amt. n c.c.	Ty. 13 added.	B. col. com. added.	c.c. Br. sol. added. 50= 1 c.c. org. sol.	Culture Medium.	Result.	Remarks.
1	Croton	None	100	..	..	0	Agar	S fewer	Control
2	"	"	"	..	..	5	"	S + T C T T T T T T	"
3	Stagnant	Filtered, 3 filter papers	"	..	..	0	"	S + T C T T T T T T	"
4	"	" " " "	"	..	..	0	"	S + T C T T T T T T	"
5	"	" " " "	"	..	+	5	"	S + T C T T T T T T	"
6	Croton	None	"	..	..	0	"	S + T C T T T T T T	"
7	"	"	"	..	..	5	Hiss tube	S + T C T T T T T T o	
8	"	"	"	..	..	0	" "	S + T C T T T T T T o	
9	"	"	"	+	..	10	" "	S + T C T T T T T T o	
10	"	"	"	..	..	5	Agar	S + T C T T T T T T o	
11	"	"	"	..	+	5	" and ferment tube	S + T C T T T T T T o	
12	"	"	"	..	..	0	" " " "	S + T C T T T T T T o	
13	"	"	"	..	..	10	" " " "	S + T C T T T T T T o	
14	Stagnant	"	"	+	..	5	"	S + T C T T T T T T o	
15	"	"	"	..	..	5	Hiss tube	S + T C T T T T T T o	
16	"	"	"	+	..	10	" "	S + T C T T T T T T o	
17	"	"	"	..	..	35		No growth	
18	"	"	"	..	+	5	Agar and ferment tube	S + T C T T T T T T +	
19	"	"	"	..	..	10	" " " "	S + T C T T T T T T o	
20	"	"	"	..	..	50	" " " "	No growth	
21	"	Filtered, 3 filter papers	"	..	+	5	" " " "	S + T C T T T T T T +	
22	"	" " " "	"	..	..	10	" " " "	S + T C T T T T T T o	
23	"	" " " "	"	..	..	15	" " " "	S + T C T T T T T T o	
24	"	" " " "	"	+	..	5	Hiss tube	S + T C T T T T T T o	
25	"	" " " "	"	..	..	10	" "	S + T C T T T T T T o	
26	"	" " " "	"	+	..	15	" "	S + T C T T T T T T o	

The Hiss media and the fermentation tubes proved satisfactory means of determining the test cultures, the only doubt arising in No. 14, in which neither was used, and it was shown that sufficient bromine could prevent growth of even the saprophytes in the stagnant water. A series of experiments was then executed to learn the amount of urine contamination necessary to make the bromine method unreliable, and fresh urine was added to sterile Croton water in the proportions of 2, 5, 10 and 40 per cent. These mixtures of urine were then infected with typhoid and coli, and exposed to varying amounts of the same bromine solution as before.

Experiments 13 to 17 inclusive were further controlled by adding 1 c.c. of the water to Hiss plate media and examining the resulting plate microscopically, and even with that considerable amount of water no typhoid colonies were discovered. The colon bacillus proved somewhat more resisting than typhoid, but it was clear that this method of disinfection is perfectly applicable

TABLE III.

No. of Experiment.	% of urine in Sterile Croton.	No. of c.c.	Ty. 13 added.	B. col. com. added.	c.c. Br. sol. added. 50= 1 c.c. org. sol.	Culture Medium.	Result.	Remarks.
1	40	100	+	+	0	Hiss tube Agar plates	Cloudy S + on plates	Control
2	40	"	..	..	0	Ferment tube " "	Gas S + on plates	"
3	40	"	+	..	20	Hiss tube " "	S + T C T +	
4	40	"	..	+	20	Ferment tube " "	S + T C T + gas	
5	10	"	+	..	0	Hiss tube " "	S + T C T +	Control
6	10	"	+	..	10	" " " "	S + T C T +	Of 2 Hiss tubes, one cloudy, 1 c
7	10	"	+	..	12	" " " "	No growth in either	
8	10	"	+	..	15	" " " "	S + T C o +	Plate contaminated
9	10	"	..	+	0	Ferment tube " "	S + T C T + gas	Control
10	10	"	..	+	10	" " " "	S + T C T + "	12 Colonies
11	10	"	..	+	12	" " " "	S + T C T + "	13 "
12	10	"	..	+	15	" " " "	S + T C T +	5 "
13	5	"	+	..	0	Hiss tube, Hiss plate " "	S + T C T +	Control tube cloudy pl. hd. ty. co
14	5	"	+	..	0	" " " " " "	S + T C T + o	Tube clear & no T. col. on plate
15	5	"	+	..	10	" " " " " "	S + T C T + o	" " " " " "
16	5	"	+	..	10	" " " " " "	S + T C T + o	" " " " " "
17	5	"	+	..	12	" " " " " "	S + T C T + o	" " " " " "
18	5	"	..	+	0	Ferment tube " "	S + T C T +	Control
19	5	"	..	+	0	" " " "	S + T C T + "	3 Colonies
20	5	"	..	+	10	" " " "	S + T C T + "	2 "
21	5	"	..	+	10	" " " "	S + T C T +	3 "
22	5	"	..	+	12	" " " "	S + T C T +	2 "
23	2	"	+	..	0	Hiss tube " "	S + T C T +	4 "
24	2	"	+	..	0	" " " "	S + T C T +	6 "
25	5	"	+	..	10	" " " "	S + T C T +	21 "
26	2	"	+	..	12	" " " "	S + T C T +	12 "
27	2	"	..	+	0	Ferment tube " "	S + T C T +	9 "
28	2	"	..	+	0	" " " "	S + o C C o	No growth
29	2	"	..	+	10	" " " "	S + o C C o	" "
30	2	"	..	+	12	" " " "	S + C C o	3 Colonies

to water in which there is not more than 2 per cent. of fresh urine.

TABLE IV.

No. of Experiment.	Water.	No. of c.c.	Ty. typ. added.	B. col. com. added.	c.c. Br. sol. added.	Culture Medium.	Result.	Remarks.
1	1/5 Stagnant 4/5 Croton	10,000	+		0	Hiss tube	Clouded	Control
2	1/5 Stagnant 4/5 Croton	10,000	+		4	Hiss tube	Not cld.	
3	Croton	10,000		+	0	Fermen. tube	Gas pro.	Con.
4	Croton	10,000		+	4	" "	No gas	

Two controlled experiments were made with larger amounts of water and undiluted bromine solution and the results were the same as with smaller amounts.

To learn something of the effect of the treatment on the taste of water a series of glasses was prepared with Croton water, and water treated with amounts of the bromine solution and neutralizer varying from the normal amount proposed by Schumburg to five times that amount, and this series was tasted by six persons with the result that some of the series tasted a little either "salty" or "earthy" or, as several said, like "stale Congress" or Vichy.

The experiments performed, therefore, have given results quite in accord with those of Schumburg and Pfuhl. The failures have emphasized some of the limitations of the method without discrediting it, and to one having in mind the typhoid bacillus as the one the destruction of which is particularly desirable the results are most encouraging. The method is not one which may be expected to make cesspools or even puddles drinkable, though it was shown that if sufficient bromine is added it is possible to make even the stagnant water under experiment sterile. That water which has become infected with typhoid, but which is otherwise good drinking water, may by this means be made a safe source of supply would seem to be demonstrated. The occasions on which just this is desirable are numerous. Schumburg suggests, as notable instances, barracks and camps in infected localities and vessels taking on water at suspected ports. As to the practicability of the method it may be said that, most important of all, it is rapid, and furthermore that the solutions are easily made and not expensive. Bromine retails at from sixty-five to seventy-five cents a pound. The solution must be kept in sealed vessels and preferably in vessels which hold just the amount to be used for the special emergency, Schumburg has devised a military pouch, like an orderly pouch, intended to serve for the preparation of a day's supply of water for a regiment of twelve hundred men. The pouch contains tubes of the bromine solution, neutralizing salts, measuring vessels and stirrers and weighs about four pounds. A sergeant requires one tube of solution and one tube of salt for his company, empties each into a liter of water, and gives 10 c.c. of the bromine water to every soldier as he files past carrying a liter of water. The soldier stirs the solution for five minutes, and then filing by again receives the proper amount of the salt solution and in two minutes more the water is fit to drink.

In conclusion I wish to express my obligation for kind advice and assistance from Drs. W. H. Park and R. J. Wilson and for chemical analyses performed by Mr. J. P. Atkinson.

A THEORY OF THE PHYSIOLOGY OF SPINAL ANESTHESIA.

By H. H. STONER, M.D.,
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Now that anesthesia of the lower half of the body by means of a solution of cocaine thrown into the lumbar division of the subarachnoidean space is claiming the attention of surgeons and obstetricians the world over, a few words as to the probable physiological process by which it is brought about may not be out of place.

The term "medullary narcosis," so often used, is misleading, inasmuch as it gives the impression that the injection is made into the substance of the cord (a procedure which would certainly be fraught with much danger), whereas the solution is thrown into the subarachnoidean cavity some distance below the termination of the spinal cord.

During fetal life the spinal cord fills the entire spinal canal from the first cervical to the last sacral vertebra. But somewhat prior to and immediately after birth the rate of growth of the vertebral column is so much greater than that of the spinal cord that the lower extremity of the latter recedes up the canal, stretching, as it were, the nerves which have already pierced the bony foramina, so that by the time the individual has obtained his growth a cavity is left behind at the bottom of the spinal canal extending from the first lumbar to the first sacral vertebra, occupied only by the elongated roots of the lumbar and sacral nerves, known as the cauda equina, and the cerebrospinal fluid. It is into this cavity that the solution is injected.

While it is true that histologists are not unanimously agreed as to the method of conduction of stimuli from one neuron to another, the consensus of opinion, I believe, is that a functional approximation is effected between the arborizing extremity of the axone of one and the dendritic processes of the other. By means of such approximation a stimulus is enabled to pass readily through the various neurons composing a nervous tract and so reach its destination. This theory assumes that the arborizing extremities of the axones of neurones are endowed with certain mobile properties which enable them to make or break their connection with their associated neu-

rones. It is claimed that an impulse upon reaching these terminal filaments sets them to vibrating, and during the oscillation they come into contact with the dendritic processes of the associated neuron and so transmit the impulse to it. That they do possess a limited power of motion can hardly be doubted, and if so, and the movement is as above indicated, the physiology of spinal anesthesia is easily explained. The storehouse of the energy of a neuron resides in its cell-body. To its reticulated meshwork is accredited its mobile qualities; therefore any interference with the internal economics of the cell must necessarily interfere with its working capacity.

The studies of Nissl, Lugaro, Brauer and many others, concerning the effects which poisons introduced into the system have upon the cytological structure of the nerve-cells, show that these bodies become profoundly modified. Thus the tigroid bodies (the stainable portion of the cell) break up and in part or wholly disappear and are replaced by a dust-like substance, evidently the detritus left after the breaking-down of the cell. Such changes, of course, are permanent. But if continued intoxication leaves in its track such permanent results, is it not rational to suppose that a temporary intoxication would for the time being expend its energy upon the same structures that suffer from a prolonged intoxication? As that part of the neuron upon which its mobile qualities depend is in part affected by toxic agents, it follows that as the result of such morbid processes its capacity for transmitting impulses from one to another would be seriously inhibited; for the gap normally existing between them could not be closed owing to the paralytic condition of the arborizing fibrils, and the means for the conduction of its impulses from one to another would be effectually cut off. That cocaine is an active poison in the sense here used, and that in some way it transiently modifies the cytological structure of the neuron, none will deny.

Just what the modification is, or where it takes place, we cannot with certainty say; but the inference is that, like all other poisons investigated, it takes place within the body of the cell and is of such a nature as to paralyze the activities of its arborizing processes. In such an event sensory stimuli would fall short of the psychic precincts and consequently no sensation would be elicited.

It is well known that the sensory tracts are composed of at least three distinct neurons, *vis.*, the peripheral, intermediary and central sensory neurons. The peripheral neuron, beginning in the sensitive surface, passes up through the cord to the medulla where its arborizing axone terminates in functional relation to the dendritic processes of the intermediary neuron; this in turn passes to the thalamus, where it has a like relation to the central neuron; this last named neuron proceeds from the thalamus to the cerebral cortex, ending there among the elements implicated in the manifestation of psychic phenomena. Now, it is clear that, if the arborizing processes of the peripheral sensory neurons from any cause become paralyzed to such a degree as to inhibit their mobile capacity and prevent their approximation with the dendritic processes of the intermediary neurons, a functional relation between the two could not be effected, consequently sensory impulses could proceed brainward no further than the meeting-place of these two neurons in the medulla, and, of course, no sensation would be aroused. This, I take it, is what occurs when a solution of cocaine is thrown into the subarachnoidean cavity. The toxic effect of the cocaine upon the working structure of the cell-body being such for the time being as to completely destroy its tonicity, the arborizing extremity of its axone therefore retracts out of functional relation to its associate, and it becomes an entity existing wholly within itself.

In what way does the poison gain access to the cell-bodies? Of course, it cannot be by direct injection or infiltration into their substance, for they are situated, outside of the canal, in the spinal ganglia. The most plausible theory is that the axones, occupying the cavity into which the solution is thrown, absorb it and transfer it by way of their vascular supply back to the cell. It is noteworthy that the neurons most profoundly affected by the solution are those that go to make up the cauda equina. A portion of the nerve here lies exposed, as it were, and floats in the cerebrospinal fluid which is impregnated with the poison. After they pierce the cord they are protected by its substance and investing membranes. That the potency of the agent should be greatest at the point of injection, where the solution for a time is strongest, is to be expected and is borne out by clinical experience; and that the solution as it becomes diluted by the spinal fluid should exercise an effect higher up in the cord should also be expected and is borne out by clinical experience. The stronger the solution injected the more pronounced are its manifestations upon nerves located higher up in the cord. That is what we should further expect. The after-effects, such as dizziness, nausea, sweating and headache are no doubt manifestations of the effects of a much-diluted solution upon the cortical neurons of the cerebral hemispheres. The effect of the diluted solution falls short of paralyzing their processes, but instead gives rise to the symptoms enumerated. These symptoms continue in diminishing degree until all the poison is eliminated from the system.

The question now arises, Why do the motor neurons escape the paralyzing effect of the solution? It would be reasonable to suppose, if the functional capacity of a sensory neuron should be inhibited by the absorption of a cocaine solution, that the motor neurons occupying a site alongside of the sensory ones should likewise share in the functional derangement. But clinical experience proves this not to be the case. The

motor neurons, the axones of which pass through the cauda equina, apparently go on performing their function of transmitting motor impulses unmindful of the presence of the toxic agent. It must not be supposed that these neurons are unaffected by the solution. The cytological structure of their cells certainly undergoes the same morbid change as do those of the sensory neurons, but, owing to the direction of the motor current and the relation of the end plates of the peripheral motor neurons to the muscle fibers, their capacity for transmitting motor stimuli to their destination in the muscle is not seriously handicapped. A motor tract, as is well known, is composed of a central and a peripheral neuron, also that the junction of the two takes place in the anterior horn of the cord; therefore the peripheral motor neuron only is affected by the toxic agent. Stimuli over the sensory tract are prevented from reaching their destination owing to paralysis and withdrawal of the arborizing extremity of the peripheral sensory neuron from contact with its associated one, but in the case of the peripheral motor neuron no such ending takes place.

These neurons terminate in end plates by anastomosis with muscle fibers, consequently they cannot retract out of functional contaet with the muscle, and any impulse which reaches this neuron must expend its energy upon the muscle fiber with which it is connected. The relation of the end plate of the neuron to the muscle fiber is such that it cannot be broken. The central motor neuron arising in the cerebral cortex and ending by its arborizing extremity in functional relation to the dendrites of the peripheral one is not in any way influenced by the cocaine solution, so that motor impulses may traverse the motor tract from brain to muscle unimpeded.

Why the reflexes are abolished in the anesthetic areas is also patent. The reflex mechanism of the cord is as follows: Immediately upon entering the cord the axones of the sensory neurons divide into two branches, one ascending and the other descending. From the descending branch a collateral is given off, the arborizing extremity of which terminates in functional relation to the dendrites of the peripheral motor neuron. In the natural state of these organs a sensory stimulus upon entering the cord may take one of two directions, or it may disperse and take both.

A portion may pass up the ascending branch, and upon reaching the brain give rise to sensation, and the other portion may take the reflex route over the descending branch and its collateral to the cell of the peripheral motor neuron, in which event a reflex action is excited. Now, it goes without saying that the solution paralyzes the arborizing processes of this collateral branch as well as those of the ascending branch, and such being the case it is withdrawn from functional relation to the peripheral motor neuron and reflex activities are thereby inhibited.

MEDICAL PROGRESS.

Dry Sterilized Catgut Ligatures.—J. H. Carstens (*Am. Jour. Obstetrics*, Nov., 1900) says that he has tried all the different kinds of catgut ligatures and has always found something wrong. The greatest objection he found to all these ligatures was that they lasted too long. After many experiments the writer prepared a dry sterilized catgut ligature as follows: The catgut is put into ether for a few days to remove all fat, and then cut into 18-inch lengths. Three 18-inch lengths are wrapped together in tissue paper. This is put into a small envelope, which is then sealed and placed in the Boerckman sterilizer and subjected to dry heat for three hours. The thermometer in the apparatus will show that the heat is at least at 300° F. After three hours the heat is shut off and the ligatures remain undisturbed in the apparatus for from twelve to eighteen hours to give opportunity for any spores to develop. Then the heat is again turned on for three hours at 300° F. The ligatures are now sterile. They are in an envelope and can be carried in a satchel. When a ligature is desired the end of the envelope can be torn off, the ligatures wrapped in tissue paper dropped into alcohol, the tissue paper removed, and the ligature threaded and used. These ligatures are never slippery, the knot never slips, they soften and liquefy and are absorbed in a week or ten days if not contaminated. Repeated tests have always found these ligatures sterile. The points Carstens makes about the dry sterilized catgut ligatures are: (1) All buried sutures ought to be absorbable. (2) All absorbable ligatures must be absolutely sterile. (3) Chemicalized sutures are no more sterile than plain sutures. (4) A suture that is chemicalized is harder and remains longer in the tissues. (5) This latter is no advantage, but a disadvantage. If in any case it is desirable that a suture should remain longer, use dry sterilized kangaroo tendon.

Clinical Characters of Tremor.—Tremor is often an important diagnostic point in arriving at a proper conclusion in regard to the nature of disease and is so easily observable that its value should be appreciated. R. F. Williamson (*Med. Chron.*, Oct., 1900) reviews the peculiarities of the common forms and says that it is important to note what part is affected, whether the tremor persists when the limb is at rest and whether it is increased, diminished, or arrested by voluntary movements. The influence of mental emotions, etc., should also be tested. Tremor is an important symptom of paralysis agitans. It is unilateral at first and then becomes bilateral. The movements are usually most marked in the thumb and finger, causing a flexion and extension, or pill-rolling movement. It is usually most marked during repose and either ceases entirely or is greatly diminished by voluntary movements. The handwriting is therefore affected later. Other characteristics of the disease appear, as the pe-

culiar attitude of the body, the muscular inertia and rigidity, the fixed facial expression, etc. In disseminated sclerosis tremor appears only on voluntary movement, and hence is called intention tremor. It consists of coarse, jerky oscillations, brought out more distinctly by efforts to perform fine, slow actions. Attempts to drink a glass of water frequently give typical results. The handwriting is affected early and the letters are extremely jerky and irregular. Muscles of the whole arm become involved and sometimes those of the head or the entire body. In alcoholism the tremor occurs, not only in the hands, but in the face, lips, tongue and perhaps the legs. The tremor is fine, rapid, not confined to the hands or fingers, increased by voluntary movement and often chiefly lateral when the arm is extended. In writing the letters are wavy and irregular, but not so marked as in disseminated sclerosis. The senile, asthenic, simple and hysterical tremors usually occur during repose, but are much greater during voluntary movement. The clinical history of the case assists diagnosis materially.

Suprarenal Gland in Hay-Fever.—Contrary to the favorable results Solis-Cohen obtained in hay-fever from the administration of suprarenal gland by the mouth, Lewis S. Somers (*Phila. Med. Jour.*, Dec. 8, 1900) reports 21 cases in which the results were not entirely satisfactory. These patients varied in age from seventeen to fifty-six years, and received the suprarenal extract exclusively for periods varying from one to six weeks each. Ten of the patients were obliged to discontinue the suprarenal tablets after a week's trial because of disagreeable symptoms, while 7 of them used them continuously for six weeks. Tablets of 5 grains each were found to be the best form in which to administer the drug, as they did not produce as much nausea as the glycerin solution did. A five-grain tablet was given every two hours except in those cases in which it produced disagreeable symptoms, when the same dose was given every four hours, from 15 to 75 grains being taken daily. The nasal symptoms were but slightly affected, the sneezing attacks were apparently less frequent, but no less severe than formerly. The nasal stenosis was favorably affected in about one half of the cases, the turbinals being diminished in size. The pruritis of the chin and buccal mucous membrane was less when the tablets were dissolved in the mouth, but not when they were swallowed. All those patients who had had asthmatic symptoms, during the hay-fever season only, were unfavorably influenced. The paroxysms became more frequent and more severe while the suprarenal tablets were being taken. In 5 cases which had never had asthmatic attacks they appeared while the drug was being taken and disappeared when it was withdrawn. The effect of the drug was more satisfactory when the tablets were allowed to dissolve upon the tongue than when they were swallowed. In the latter case there were little or no appreciable results obtained. The chief disagreeable symptoms noted were nausea, a sense of chest-constriction, and the development of asthma or the augmentation of the paroxysm when it already existed. Somers does not think that the favorable results obtained were of sufficient magnitude to recommend its use for this purpose. Locally, he considers suprarenal extract of great service, but, internally, he considers it of little or no use in the treatment of hay-fever either with or without conjoined treatment.

Abortive Treatment in Gonorrhea.—C. Kopp (*Münch. med. Woch.*, Nov. 27, 1900) recommends that after every suspected coitus, the meatus and fossa navicularis of the urethra be thoroughly rubbed with a small piece of cotton on a sound and that a few drops of a two-percent. solution of silver nitrate or of twenty-percent. protargol-glycerin be brushed over the same area. The inflammatory reaction which follows is but slight and lasts only a few hours. He has been able to abort the disease twelve hours after the infection.

Pleomorphism in Bacteria.—E. Schwalbe (*Münch. med. Woch.*, Nov. 20, 1900) discusses the interesting question whether it is possible, by different methods of culturing, to change one variety of bacteria into another. The term pleomorphism has been wrongly applied to such bacteria which assume different forms during their cycle of development; thus, the bacillus subtilis at different times appears as rods and again as threads. An illustration of the term, in its more proper restriction, is afforded by the tubercle bacillus, or more properly, fungus. It has been possible by inoculating it into cold-blooded animals to considerably alter its morphological and biological characteristics so that really a new variety results. It has been known for some time that most pathogenic germs may be rendered avirulent by growing them on artificial media and more recently it has been found that a certain chromogenous bacterium, the staphylococcus pyogenes aureus, can produce colors of different shades after proper manipulation. While artificial cultivation may thus result in the formation of different sub-classes, the evidence that one distinct class may be converted into another is not forthcoming.

Causes of Insanity.—On account of the inability to discover organic changes in the brains of so many insane persons and on account of the indefinite and varied character of the structural lesions when they are found, innumerable pathological conditions in other portions of the body have been suggested as of sufficient influence to cause the abnormal manifestations of the brain. M. D. Jones (*Med. Rec.*, Dec. 15, 1900) discusses at considerable length and analyzes a number of cases to show the relation of the sexual function to insanity. She believes that since ovulation and generation are normal functions, disease of

the genital organs in woman may be the source of great irritation and may even cause such exhaustion and prostration as to produce extreme nervousness and even mania and insanity, but that these abnormal mental conditions can occur only in those who have some neurosis, brain lesion or inherited tendency thereto. As causes of insanity she lays especial stress upon the influence of heredity which is generally acknowledged as an efficient factor. The abuse of alcohol is another prolific cause and has been found to be largely responsible for at least twenty-five per cent of cases admitted to certain hospitals. Its deleterious effects are exerted not only upon the person using it, but also upon the mental and physical development of the offspring, especially if begotten while the parent is in a state of drunken stupor. The condition of other organs of the body, the stomach, intestines, the circulatory and respiratory systems, all have their influence, and, perhaps, as much so as the genital organs, in causing insanity among those who are mentally weak or are predisposed to mental abnormalities.

THERAPEUTIC HINTS.

Ovarian Pain.—An excellent combination is

℞ Potass. bromid..... 1.0 (gr. xv)
Chloral hydrat..... 0.8 (gr. xij)

given at intervals of four hours.—*Macnaughton-Jones.*

Muscular Rheumatism.—Severe and acute forms, writes J. M. Anders, require anodyne and hot applications, and opiates. Hot fomentations, the Turkish bath, hot-water bag, hot-water sponging, or dry heat by bags filled with salt or hops, promote comfort, and, if begun early, may abort the attack. The affected muscles, especially in torticollis, may be covered with flannel and a warm flatiron passed over for a few minutes. For lumbago, sterilized needles, 3 or 4 inches long, are inserted at the seat of pain, and withdrawn after five or ten minutes. Blisters have not proven of value. In subacute and obstinate cases a twenty-per-cent. salicylic-acid ointment may give good results. Active friction with anodyne and stimulating liniments, massage, and electricity are worthy of trial. In all cases antirheumatic remedies are to be employed, and, if chronic, potassium iodide guaiacum, and small doses of arsenic may be added. The nutrition and general health must also be looked after.—*Practice of Medicine.*

Acute Pneumonia.—The severe pain at the onset, write Fowler and Godlee, is probably due to the stretching of the inflamed pleura by the engorged lung. It may be relieved by an ice-bag, but leeches or a large linseed poultice are preferable. The poultices should be changed every two or three hours. In lieu of these the affected side may be covered with a layer of cotton-wool heated at the fire and sprinkled with a stimulating liniment. When the poultices are discontinued a cotton-wool jacket should be worn. Rest must be absolute, and at the onset will be promoted by morphine, 0.01-0.015 (gr. 1/6-¼), repeated once if necessary. Later in the disease morphine is dangerous. Calomel, 0.2 (gr. iij), should be given early, and followed by an aperient. The functions of the skin must be maintained by citrate of potash, acetate of ammonia, and quinine, 0.06-0.2 (gr. j-iij), every four hours. Aconite and tartar emetic are depressant and harmful. The diet may consist of two pints of milk and a pint of beef-tea in twenty-four hours. Diminish this quantity if the stomach is at all distended. Sponging the surface of the body with water at 80° F. is grateful to the patient, lowers temperature, relieves restlessness, and promotes sleep, yet it has little, if any, effect on the course of the disease. For temperatures of 105.8° F. or over, the ice-cradle or ice-pack may be used. Oxygen, digitalis, and ammonium carbonate must be employed early to ward off cardiac failure, and when this supervenes, brandy, even up to twenty ounces a day, should be given. The patient must be carefully watched, for harm may be done by over-stimulation of a weak heart. Strychnine and caffeine are valuable heart tonics. Nothing is so useful as morphine for violent delirium or hiccough. Cyanosis, epigastric pulsation, prominence of the jugular veins and a small, irregular pulse are indications for venesection. Balfour advocates

Chloral ..... 0.7 (gr. x)
Infus. digital..... 15.0 (℥ ss)

every four hours during the period of pyrexia. For delayed resolution the syrup of iodide of iron may be given with quinine.—*Diseases of the Lungs.*

Treatment of Vulvar Papillomata.— Each papilloma can be separately cured in from 5 to 8 hours. Use this solution:

Acid. salicylic ..... 2.0 (grs. xxx)
Collodion flexible .... 5.0 (grs. lxxv)

Apply some drops of this solution on 8 or 10 papillomata at the same treatment. The next day apply some to eight or ten others and repeat the application to the first group. Continue this treatment until they all disappear.

Or, paint with a brush dipped in:

Acid. acetic ..... 30.0 (℥viiss)
Acid. salicylic ..... 2.0 (grs. xxx)

After each cauterization, powder with this mixture:

Tannin ..... 15.0 (℥iv)
Salol ..... 10.0 (℥iiss)
Bismuth subnitrate ..... 20.0 (℥v)

If the papillomata are very large, remove with a sharp curette and then cauterize with the thermo- or galvanocautery.— *Jour. de Méd. de Paris.*

Urethral Chills.—To ward off chills following internal urethrotomy or the use of sounds:

℞ Morph. sulph.... 006 gm. (gr. 1/10)
Tinct. aconiti..... 15 cc (♏ ij)
Ol gaulther..... 1.0 cc. (♏ xv)

Pharyngitis.—Inflammation of the pharynx and tonsils, writes J. V. Shoemaker, is lessened by belladonna, and this may well be combined as follows:

℞ Potass. chlorat..... 0.5 (gr. lxxv)
Tr. aconiti..... 1.0 (♏ xv)
Tr. belladonnæ..... 2.0 (♏ xxx)
Ac. hydrochlor. dil... 6.0 (ʒ iss)
Infus. rhois glabræ
q. s.....ad. 120.0 (℥ iv)
Sig.: Tablespoonful every third hour.
—*Materia Medica and Therapeutics.*

Catarrhal Jaundice.—

℞ Mangani oxid..... 2.0 (ʒ ss)
Res. podophylli..... 0.13 (gr. ij)
Ext. belladon..... 0.065 (gr. j)
M. ft. capsul No. X. Sig.: One three or four times a day.
—*Shoemaker.*

Obstinate Constipation.—To overcome fecal impaction and in the constipation of lead poisoning give:

℞ Magnes sulph..... 8.0 (ʒ ij)
Morph. sulph..... 0.065 (gr. j)
Aq. menth. piper.....ad. 90.0 (℥ iij)
Sig.: A tablespoonful every two hours.
—*Shoemaker.*

Régime in Rest Cure.—7.30 A. M.—Glass of milk, hot or cold, predigested, boiled or raw. 8 A. M.—Sponge patient with tepid water, or alternate hot and cold water, the body being well wrapped in a blanket except the part being bathed. Dry with a rough towel with friction. 8.30 A. M.—Boiled, poached, or scrambled eggs, milk toast, water toast, or finely cut mutton-chop or chicken. 10 A. M.—Massage for half to one hour. 11 A. M.—Glass of milk, milk-punch, or egg-nogg. 12 M.—Read for one hour. 1 P. M.—Small piece of steak, rare roast beef, consommé soup, mutton broth, and an easily-digested and well-cooked vegetable. 3 P. M.—Electricity to individual muscles. 4.30 P. M.—Glass of milk, milk-punch, or egg-nogg. 6.30 P. M.—Buttered toast, milk, curds and whey, or plain custard, no tea or coffee. 9.30 P. M.—Glass of milk or milk-punch.—*Hare in "Practical Therapeutics."*

Acute Laryngitis.—Early in attack, says G. M. Lefferts, apply ice bag or Leiter's coil to neck, and swallow ice. If this does not abort, apply warm compress, give hot demulcent drinks and warm milk and seltzer, and frequent inhalations of steam medicated with tinct. benzoin comp. or paregoric, 4.0 to 500.0 (ʒj-Oj) of water. As the inflammation subsides insufflate with equal parts of starch and tannin or alum, or use a spray of zinc sulphate, 1.0 to 30.0 (gr. xv-ʒj), or the tincture of iron chloride, 2.0 to 30.0 (ʒ ss-℥ j). Continue this for at least two weeks. Keep nasopharynx clean by sedative and astringent sprays, give aconite internally, and compressed tablets of ammon. chlorid, chlorate of potash, cubebs, etc. At the outset a laxative and expectorants may be given, and aconite, belladonna, or codeine. If edema supervenes either scarification, intubation, or tracheotomy is required.

Chronic Rheumatism.—Liniments are of value because they relieve pain and do good to the parts either through their own virtues or on account of the rubbing, and because they give the patient something to do or have done. Useful formulæ are:

℞ Tinct. aconiti..... 8.0 (ʒ ij)
Tinct. opii.....30.0 (℥ j)
Ol. terebinth.....30.0-60.0 (℥ j-ij)
Lin. saponis q. s.....ad 240.0 (℥ viij)
Sig.: Poison! Use three times a day.
or
℞ Aq. ammon. fort.....15.0 (℥ ss)
Ol. cajuputi..... 4.0 (ʒ j)
Tr. belladon.....30.0-60.0 (℥ j-ij)
Lin, camphoræ. q. s...ad. 240.0 (℥ vij)
Sig.: Apply frequently.
—*Hare in "Practical Therapeutics."*

Pruritus.—The internal treatment, writes Geo. T. Jackson, consists of cod-liver oil, iron, and good diet, with tincture of cannabis, 0.7-2.0 (♏ x-xxx), t. i. d. for a ten-year-old child, or two per cent. pilocarpine solution, 1.0 (♏ xv) once a day, the patient remaining in bed and covered with blankets until he sweats for two or three hours. Carbolic acid 1.0 (♏ xv) a day, bromide of potash, phenacetin, and antipyrine are also of value. For local treatment a 2 to 5 per cent. solution of naphtol may be rubbed in every night and a bath with naphtol-sulphur soap taken each second night. Sulphur, tar, carbolic, salicylic or boric acid ointments have their advocates. Baths followed by inunctions of sweet oil, cod-liver oil, tar oil, or lard, or baths alone of alum, soda, or corrosive sublimate are often useful. The affected parts may be wrapped with good effect in some protective dressing, such as rubber sheeting or cotton.—*"Diseases of the Skin."*

Furuncles of the Ear.—If the auditory canal be filled or unclean, advises A. Rupp, it must be syringed out with a 2 to 5 per cent. carbolic solution followed by sodium bicarbonate solution as hot as can be borne. Dry the canal with absorbent cotton, and if the membrana tympani is intact fill with:

℞ Hydrarg. bichlor..... 0.3 (gr. v)
Glycerin .....
Alcohol .....aa. 30.0 (℥ j)

which is to remain in some minutes and then be drained off. Close canal lightly with borated or salicylated absorbent cotton. If the membrana is deficient fill canal with powdered boric acid, and close as before. When furuncles are at the inner end of the canal near the membrana, a leech or two in front of the tragus affords much relief. Boils should be incised only where pus has formed and has no outlet.—*G. T. Jackson's "Diseases of the Skin."*

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SATURDAY, DECEMBER 29, 1900.

ABSENT TREATMENT AND DEATH CERTIFICATES.

NEW York City for the past few weeks has been the scene of a most interesting spectacle. Publicly and in high places the community has been assured that there is no such thing as sickness; that Christian Science can cure all that the human mind understands to be disease and that all that is necessary to eradicate tuberculosis, cancer, smallpox, typhoid fever, or even to be able to raise the dead, is to become a *healer* and *think about it*.

All of this we regret to say we have heard before; and the medical profession has been unable to make much headway against the present wave of ignorant fanaticism that is so profitable to the high priests thereof; but there is one phase recently brought out that can be remedied and we commend it most heartily to the Health Board and the County Medical Society for investigation.

It appears from the testimony, which is being so ably brought out by the learned counsel in the Brush will case, that patients of Christian Scientists do occasionally have human manifestations such as scarlet fever, tuberculosis, etc., and that they do die. We learn that cases of contagious diseases are not reported to the Board of Health and that death certificates are being granted by a Dr. Pease, a so-called legal practitioner, without the formality of seeing the patient.

Absent treatment, even to the point of granting death certificates, is too much, and we register a protest.

BELLEVUE HOSPITAL REFORM.

A FEW weeks ago when the revision of the charter of the City of New York was being discussed, we approved unreservedly of the changes outlined by the Committee on Revision in which it was proposed to vest the governorship of Bellevue Hospital in a board of unsalaried trustees.

We refrained from specifying what almost every medical man in the city knew, that the nature of the abuses and slack management were due not to any one person's management, but to the system.

The daily papers have rather ruthlessly torn the veil of charity which we refrained from disturbing from one or two scandals of the hospital; so that we may perhaps feel less delicacy than we did before in expressing our opinions.

We note that these scandals are of a very popular nature, such as arouse a Sunday afternoon indignation on the part of the readers of bright literature, which indignation is usually satisfied by learning that the brutal nurses were suspended or dismissed.

The energetic investigations that the Charity Commissioner has been making are very commendable; but what will happen when Mr. Keller is succeeded by a less enterprising man? And how does it happen, if we may ask, that these abuses have just been brought to light? Moreover, there are less spectacular abuses that are not so easily disposed of; abuses that deal with food, cleanliness, clothing, and sleeping quarters; abuses that cannot be judged by the mouth of two witnesses, but that are the outcome of political jobbery.

Undoubtedly the argument is true that many of the alcoholics at Bellevue are better off than in the gutter, and many of the patients are better fed than they ever were in their own homes. But there are others whose standard is not so low, and when we are considering the standard of New York's greatest public hospital, we do not judge by the requirements of a tramp; but by the city's ability to provide for its poor. And this is just the point; the city has provided amply; but the provision has been badly administered, and it is high time to change.

NEW METHODS IN CHARITY, AND AT LESS COST.

At a meeting of the First New York State Conference of Charities and Correction, held in the Senate Chamber of the Capitol at Albany, November 21, 1900, the Chairman of the Committee on the Mentally Defective, Dr. Wm. P. Spratling, Superintendent of the Craig Colony for Epileptics, said, among other things:

"Mr. Roberts, State Comptroller in 1896, said that the State that year had the sum of $19,323,245 invested in permanent buildings and improvements for the care of the insane and other defective and dependent beings. He also stated that the State was spending annually $5,200,000 to maintain the people in these buildings." The author of the paper offered the following suggestions by which the first cost of preparing to take care of this vast army might be lessened, and the cost of their maintenance might also be reduced: (1) Prevention; (2) maintenance; (3) construction; (4) education of a suitable kind.

For prevention, laws should be enacted, if possible, by which the marriage and intermarriage of defective and dependent epileptics and other weak-minded persons might be prohibited. It is a question whether or not the Constitution of the State would admit of this being done; at any rate, there can be no harm in making an effort. We are certain that if the State had an effective law of this kind, and honestly carried it out, very much would be done toward cutting off a blasted progeny.

The word maintenance is largely an elastic term. Maintenance should not mean education or attendance upon these defectives by nurses and physicians especially trained for the purpose, but should mean providing them with food, lodging and ordinary care.

It is a well-known fact that a very large number of the insane are absolutely incurable. Then why go on building vast architectural piles in which these people are kept? We suspect that the reason why this has been the practice to this time has been to meet a local pride. The residents of the community like to point to one of these magnificent structures and say, "We did it; we are responsible for that magnificent institution." It would be much better if they could say, "There stands a model State institution; cheaply, but effectively built, and one that meets every purpose to which it is put."

Dr. Spratling also urged the construction of small hospitals in connection with the great cities, where the acutely insane could be taken just as soon as they become mentally unsound. These hospitals should be small; they should be presided over by the best brains that money can buy; they should be centers for teaching. Build dormitories in connection with them, if necessary, and let the physicians go there and live and acquire a real knowledge of insanity. Too many physicians, we fear, have but little knowledge of insanity, epilepsy, and the allied neuroses. The place to treat insanity is really at the patient's home when the disease first appears. But how can that be done unless the physician have a good knowledge of the disease he is treating?

The author also thinks that far less money should be spent on about one-fourth of the chronic insane. These people should be colonized in vast agricultural communities, and put at all sorts of trades, farming and gardening. They should lead a healthy outdoor life. The idea should be to spend far less money on this class and far more money on the acutely insane, who would be in the small hospitals. We think that the State should, and will yet, come to this. It will have to if it does its full duty by the people it has undertaken to protect.

The author of the paper thinks that the word "custody" should be abolished and the word treatment substituted instead. Custody means mere care, *i. e.*, the bathing, dressing and feeding of patients. Every patient should be under good care and treatment, for no human being can be dogmatic enough to say what case is curable and what is not. Proper education of a general kind for the State's wards has never been put into practice. Many of them must be under State care as long as they live. Put them in school; teach them simple things, things that they can use as State charges and that will help to reduce the cost of their maintenance.

Instead of building vast architectural piles, small homes should be built. Instead of putting from $550 to $3000 in a building per bed, put in $300 or $400. That is ample; that will build the very best kind of buildings, buildings that will stand for a generation.

To sum up, the following, the author thinks, is required: (1) Prevent insanity, epilepsy, imbecility, idiocy, feeblemindedness, as far as possible, by forbidding afflicted persons to marry or intermarry. (2) Maintain *at less cost* the cases that are chronic and incurable, and maintain, under proper treatment, *at greater cost, to stimulate recovery,* those that probably can be

cured. (3) Build less expensive structures in which defective and dependent State charges shall live. (4) Give those that ought to have it an education that they can use, either in the institution that cares for them, that the cost of their maintenance may be lessened, or that they may use in the outer world when they leave the institution, when the State has done its work well and turned them back into the great business current as nearly normal men and women as science and art can recreate them.

Some one in Scotland has estimated that the average man, striking the balance between the banker and the pauper, is worth $400 a year to the community in which he lives. The distinguished Lunacy Commission in the State of New York has ascertained that the sum of $6000 is spent, first and last, upon every individual committed to a State Hospital for the Insane. Surely it does not require a very acute mind to see on which side the burden of cost presses hardest and longest.

ECHOES AND NEWS.

NEW YORK.

Academy of Medicine's New Officers.—The New York Academy of Medicine held its annual election of officers last week. The officers elected were: President, Dr. Robert F. Weir; Vice-President, Dr. Charles L. Dana; Recording Secretary, Dr. John H. Huddleston; Trustee, Dr. Alexander A. Smith; Corresponding Secretary, Dr. Louis F. Bishop; Member of the Committee on Admissions, Dr. John Van Doren Young; Member of the Committee on Library, Dr. Charles L. Fisk.

An Institution to Watch.—The School of Health, with principal offices in New York, was incorporated December 19th, to found and carry on a School of Health in New York, with branches in other cities, for mental and physical culture, instructions in sanitary laws, the laws of heredity, the evil effects of tobacco, alcohol and morphine upon the human system, and the chemistry of cooking, food values and their adulterations. The directors are: Dr. Ella A. Jennings, Dr. Egbert Guernsey, John J. Plunkett, Sylvester M. Weimer of New York; George Donaldson, Cliff Side, N. J., and Mrs. E. C. Hazard of Shrewsbury, N. J.

Bequest to Eye and Ear Infirmary.—William C. Schermerhorn, Second Vice-President of the New York Eye and Ear Infirmary, at Second Avenue and Thirteenth Street, presented that institution with $75,000 on Thursday, December 20th. The money is to be expended in the construction of a pavilion for patients having disease of the ear.

New Charter and Health Officers.—Members of the Charter Revision Commission say that the fears which have been expressed by residents of outlying boroughs regarding the convenience of the new Health Board provisions are based on a misapprehension of the charter. They say it gives the Health Commissioner full power to establish as many branch offices as are required.

A Subject for Investigation.—Commissioner Keller is still hard at work investigating Bellevue. Last week he received a verbal complaint from an alienist of this city that there was a "combination" between two of the insanity experts who examine all supposed lunatics brought to Bellevue, whereby rich patients were turned over to the physicians' private practice and were also recommended to certain sanitariums.

Obituary.—Dr. John E. Losee, one of the oldest and most prominent physicians in northern Dutchess County, died Saturday at his home in Upper Red Hook, aged seventy-four years. He had practised his profession for forty-seven years in that locality. He was born in Saratoga County, N. Y., and graduated from the Albany Medical College in 1852. After several months in the old New York Hospital in 1853 he entered active practice in Upper Red Hook.

Dr. Frederick Osborn Lloyd died last week at Hamilton, N. Y., of heart disease. He was at one time attached to the staff of the Presbyterian Hospital in this city and practised medicine here. His widow and a son survive him.

Dr. John Henry Fruitnight died last week at his home, 161 West Fifty-seventh Street, aged forty-nine years. He was graduated from the College of the City of New York in 1872 and from the Bellevue Hospital Medical College three years later. Dr. Fruitnight's work as a specialist in the diseases of children was highly appreciated by his professional confrères.

Dr. Charles Sabin Taft, one of the surgeons who attended President Lincoln immediately after the President was shot in Ford's Theater, died last week at his home, 39 South Seventh Avenue, Mount Vernon, of cancer of the throat.

Medical Society of the State of New York.—The preliminary program of the ninety-fifth annual meeting of this Society is just to hand. The following papers will be presented: "Recent Progress in the Treatment of Pneumonia," by James King Crook, New York; "Congenital Dislocation of the Shoulder with Report of Cases," by Daniel W. Marston, New York; "Appendicitis and Menstrual Irregularities," by A. L. Beahan, Canandaigua; "Small Hospitals and Their Administration," by Louis Nott Lanehart, Hempstead; "The Necessity of Greater Conservatism in the Use of Vasodilators, in Certain Cases of Cardiovascular Disease," by Louis Faugeres Bishop, New York; "Hernia of the Urinary Bladder," by William S. Cheesman, Auburn; "Treatment of Prostatic Hypertrophy," by Ramon Guiteras, New York; "The Medical Society

of the State of New York: Its Past and Future," by Albert Vander Veer, Albany; "What is Rodent Ulcer?" by John A. Fordyce, New York; "Noma of the Genitalia," by Andrew McFarlane, Albany; "Esophoria or Latent Squint," by Francis Valk, New York; "Changes in the Crystalline Lens During Accommodation," by Lucien Howe, Buffalo; "Treatment of Chronic Purulent Otitis Media," by James F. McKernon, New York; "Tuberculosis of the Iris," by W. F. Mittendorf, New York; "Can Interstital Keratitis Be Prevented in the Offspring of Syphilitic Parents?" by Peter A. Callan, New York; "Operations for Deformities Following Pott's Fracture," by W. O. Plimpton, New York; "Indications for Operations Upon the Mastoid," by Wendell C. Phillips, New York; "Indications and Limitations of the Vaginal Route of Attack in Pelvic Diseases in Women," by J. Riddle Goffe, New York; "What Complications of Pregnancy, Labor, or Puerperium Justify Abdominal Section?" by William Warren Potter, Buffalo; "The Treatment of Persistent Suprapubic Fistula Resulting after Ovariotomy," by Willy Meyer, New York; "Results Following the Cure of Chronic Defects on the Vesical Function," by Eugene Fuller, New York; "Ectopic Pregnancy, Primary Rupture, the Opportune Time for making Diagnosis," by George McNaughton, Brooklyn; "An X-Ray Study of the Causes of Disability Following Fractures Involving the Elbow Joint," by Samuel Lloyd, New York; "Contributions to Abdominal Surgery," by James E. Keely, New York; "Loose Cartilage in the Knee-Joint," by P. R. Furbeck, Gloversville; "Pus in the Peritoneal Cavity," by Robert T. Morris, New York; "The Indications for and Limitations of Spinal Cocainization in Surgery," by George R. Fowler, Brooklyn; "The Results of Nephropexy for Movable Kidney," by George M. Edebohls, New York; "Relations Between Certain Diseases of the Skin and the Menstrual Function," by L. Duncan Bulkley, New York; "Hysterical Anesthesia and Analgesia," by B. C. Loveland, Syracuse; "Deep Breathing as a Curative and Preventive Measure," by John H. Pryor, Buffalo; "Masturbational Neuroses," by William C. Krauss, Buffalo; "Arthritis Deformans," by Herman Mynter, Buffalo; "Tenosynovitis Calcarea," by Carl Beck, New York; "The Treatment of Puerperal Fever," by Herman J. Boldt, New York; "Belladonna *vs.* Scopolia," by Reynold W. Wilcox, New York; "Disinfection Within and Without the Body in Diphtheria," by M. A. Veeder, Lyons; "After-Thoughts on Diphtheria," by I. N. Love, New York; "Fatty Degeneration of the Heart," by Thomas E. Satterthwaite, New York; "Recent Experiences with Erythromelalgia," by Henry L. Elsner, Syracuse; "A Simple and Accurate Method of Substitute Infant-Feeding," by Henry Dwight Chapin, New York; "Leprosy in the Hawaiian Islands," by Charles E. Davis, Albany; "The Ponometer and its Value in Determining Arterial Tension," by Henry L. K. Shaw, Albany; "Pleuropericardial and Diaphragmatic Adhesions. Illustrated by Colored Wax Models," by D. H. Goodwillie, New York; "Differential Diagnosis in Diseases of the Spinal Cord," by E. D. Fisher, New York; "The Immunizing Effect of 'Rag Weed' in Hay-Fever," by H. Holbrook Curtis, New York.

"Contribution to Pelvic Infection in Women," by Charles A. L. Reed, Cincinnati, President American Medical Association; discussed by: J. F. W. Ross, Toronto, Ontario; L. S. McMurtry, Louisville, Ky.; W. E. B. Davis, Birmingham, Ala.; Bache McE. Emmet, New York; William M. Polk, New York; George M. Edebohls, New York; James Clifton Edgar, New York; James P. Boyd, Albany; "Report of Five Cases of Ovarian Tumors with Twisted Pedicles," by George B. Johnston, Richmond, Va.; "Surgery of the Spleen," by J. Collins Warren, Boston, Mass.; discussed by: Albert Vander Veer, Albany; Charles McBurney, New York; Robert F. Weir, New York; Robert T. Morris, New York; Thomas Roddick, Montreal, Canada; "The Pathology and Diagnosis of Intestinal Obstruction," by J. B. Murphy, Chicago, Ill.; "Inguinal Hernia," by Merville Ricketts, Cincinnati, O.; "Gastrojejunostomy in Gastrectasis," by A. H. Cordier, Kansas City, Mo.; "Toxin of the Colon Bacillus," by Victor C. Vaughn, Ann Arbor, Mich.; "The Treatment of Delirium Tremens by the Intravenous Infusion of Saline Solution," by James P. Warbasse, Brooklyn; "Tetanus Following Clean Operation: Report of Cases," by Joseph W. Bissell, New York; "The Advances in State Medicine," by M. J. Lewi, New York; "Aseptic and Antiseptic Precautions in Dental Surgery," by J. B. Ransom, Dannemora; "Report of Case of Brain Tumor; Operation; Improvement," by William M. Leszynsky, New York, and James H. Glass, Utica.

PHILADELPHIA.

Attendance at Medical Colleges.—The number of students at the various medical schools at present is as follows: Jefferson, 752; University of Pennsylvania, 566; Medico-Chirurgical, 416; Woman's Medical, 164; total, 1898. In addition there are 1224 students of dentistry and 505 students of pharmacy.

Reception to Dr. Weir.—Dr. Robert F. Weir, of Columbia University, visited this city December 19th as the guest of Dr. W. W. Keen. After being tendered a reception and dinner at the University Club, Dr. Weir operated in Dr. Keen's clinic at the Jefferson Hospital, one case being a nephrectomy for sarcoma of the kidney.

Graduation of Nurses.—A class of seven nurses received diplomas from the Jefferson Hospital training school December 20th. Dr. E. P. Davis, in presenting the medal of honor, stated that the course of three years was none too long and that nurses from the so-called training schools which gave short courses of lectures and but little practical training were not recognized by the College

of Physicians, which has an office open day and night for the supplying of trained nurses to private cases.

The Philadelphia Medical Journal.—With the opening of the New Year, Dr. George M. Gould will retire from the editorial management of the *Philadelphia Medical Journal*, and the duties he has so ably carried on will be assumed by Dr. John Hendrie Lloyd and Dr. Julius L. Salinger. Relief from a threatened financial embarrassment has been averted, through a change of ownership, Mr. Morwitz, the publisher of *The German Demokrat* of Philadelphia, now controlling the majority interest. It is rumored that Dr. Gould will be connected with a new periodical enterprise. Should such be the case, Dr. Gould will undoubtedly command the good wishes of the profession at large.

Early Restoration of Function in Sutured Nerve.—Dr. Ernest La Place reports a case of practically immediate restoration of function following suture of the ulnar nerve. The nerve had been severed for a period of sixteen months. When the ends were prepared for suturing a distance of one and three-quarter inches intervened, but this was overcome by stretching. The ends were carefully apposed and a large number of sutures inserted. On the morning following the operation it was noticed that the boy had perfect motion of the hand. As no observation was made earlier it is not known if motion was present immediately after the operation. Sensation in the fingers is curiously altered in that pricking at one part is felt in another. This is supposed to be due to the fact that the corresponding proximal and distal ends of the fibers were not joined. The case presents points in support of the theory of the electrical nature of nerve force.

Medicine and Surgery of the Coming Century.—Drs. H. C. Wood and J. William White, in articles recently written for a local paper, give their views regarding the future of medicine and surgery. Dr. Wood, after stating the inability of man to foretell what the coming century will bring forth, says, "Only this seems probable, namely, an enormous increase of our knowledge of what may be considered the natural remedies for disease. Very many diseases produce within the human body the antidote which enables the forces of the system, if they do triumph, to achieve their victory over the forces of disease. Most, if not all, contagious diseases seem to leave behind them in their victim some substance which protects him in the future, more or less imperfectly, from the same disease. The approaching rewards of medical investigation which shall be of the most value to mankind will probably lie in this province of study. We now treat most contagious diseases by modifying the symptoms and trying to keep the patient alive until Nature shall have completed her processes and cured the disease. It may well be that in the future the physician will have the natural antidote in his hands and put an end at once to the disease; or, perchance, by the previous use of the antidote he may prevent the attack of the disease—vaccinating, so to speak, the patient against all contagious diseases as he does now against smallpox. Whether man shall eventually reach the condition in which the doctor shall be eliminated from the body politic because his occupation has been destroyed by the removal of disease, who can tell?"

Dr. White states that so great an advance has been made during the century that the surgery of 1800 was more closely allied to that of Hippocrates that to the surgery of 1900. Dr. White is not pessimistic as was Mr. Lyme when he told Lord Lister in his early days to remain in Edinburgh, remarking at the same time that it really seemed as though there were not much left to do in the way of advancing surgical science. Looking forward is speculation, but "it seems safe, however, to affirm that before the coming century is very old many conditions now beyond the reach of surgery will come well within its field for either prevention or cure. The discovery of the cause of cancer will be made and will be followed by greatly improved methods of treatment. As we already know the cause of tuberculosis, its cure also should soon be possible in infinitely more cases than at present. Blood-poisoning in its many forms, already through antisepsis so greatly diminished in number and severity, should with the advance of the serum treatment, and of other yet-to-be-discovered methods, almost disappear. Lockjaw should be wiped off the list of surgical complications. All the infectious diseases now so fertile in producing conditions requiring surgical intervention will almost certainly be done away with by preventive inoculation, or will be easily and rapidly cured by the use of the respective antitoxins. New anesthetics, new antiseptics, new means of modifying vital processes and destroying harmful intruders into the living organism may confidently be anticipated. The problems of life are being investigated in ways which may at any moment result in a revolution in all our methods of approaching questions involving living matter. It is not impossible that both the medicine and the surgery of the future will deal directly with the individual cells, the aggregation of which make up all living organisms. It is not rash in the present condition of experimental and inductive science to predict that the advances in surgery during the twentieth century will outstrip even the epoch-making discoveries of the nineteenth."

CHICAGO.

Evanston Hospital.—Plans for improvements and additions to the Evanston Hospital, which will require an outlay of nearly $50,000, have just been completed. The plans include the erection of the new Herman D. Cable Memorial Building, a new isolation hospital, a boiler-house, and improvements to the present buildings. The

Cable Memorial Building will be a handsome four-story structure of brick and terra-cotta.

Prevalence of Influenza.—Eight deaths have been reported this month from influenza. One physician reports that he has had 35 cases of the malady within ten days; another that he has treated 30 cases within a week.

Prevalence of Typhoid Fever in St. Luke's Hospital.—Within the last three weeks a dozen or more cases of typhoid fever have developed among the nurses, physicians and employees of this hospital. The hospital authorities are at a loss to account for the outbreak. Every resource has been exhausted to discover the cause of infection, but without success.

Obituary.—Dr. Ephraim Ingals, one of the pioneer physicians of Chicago, died on the morning of December 18th, at the age of seventy-eight years. Death was due to heart failure. For many years Dr. Ingals was closely associated with the development of higher medical education in Chicago, both as a lecturer in and contributor to the medical institutions of the city. At the time of the affiliation of Rush Medical College with the University of Chicago he gave $25,000 to aid in paying off the college debt and to found a Chair of Therapeutics and Preventive Medicine. He also gave $10,000 to the Northwestern University Medical School for the equipment of its laboratories.

New Dormitory of Provident Hospital.—The beautiful dormitory of this hospital, built to give colored women facilities for becoming trained nurses, was dedicated December 21st. It is a model of all that is convenient and comfortable for the training of nurses. It is complete in every respect from the diet kitchens in the basement to the dormitories and study rooms on the third and fourth floors. Although adjoining the hospital and opening into it, the hall is entirely separate, and gives perfect quiet and freedom to the nurses when not on duty, which in their work is so necessary to enable them to endure the severe strain. It was a year ago that Nathan N. Freer donated $12,000 for the building of Esther Freer Home in memory of his mother. Realizing the general advance in the cost of building and building materials, the donor enlarged his original gift by adding $3520 to cover the cost of construction, and $2595 to meet the cost of furnishings.

Regulations for Lodging-Houses.—Dr. M. Meyerovitz, Chairman of the Committee on Lodging-Houses and Sanitation of the State Board of Health, recommends the following regulations for lodging-houses: Mattresses must be made of washable rubber. Houses must be fumigated at least once a week. Better toilet arrangements must be provided. Each lodging-house shall have a temporary isolation room for use in case of an outbreak of a communicable disease, and before the local health board is able to act.

Illinois Northern Hospital.—The new infirmary at this institution for the insane, located at Elgin, was recently opened, the cost of its erection being $38,000. The building will accommodate 110 patients.

Sentence of James Armstrong.—Judge Kohlsaat has imposed a sentence of one year in jail and a fine of $500 on James Armstrong, President of the Metropolitan Medical College. The defendant was convicted recently of using the mails to defraud in connection with a "diploma mill." Sentence against Thomas Armstrong, who was convicted, and John H. Randall, who pleaded guilty to the same offense, will be passed at the next term of court in March. James Armstrong made a hard fight, and he now threatens to prolong the legal battle in the higher federal courts. The Armstrongs first began business in 1895 with the "Illinois Health University." This was a "diploma mill" on a small scale, and the Illinois State Board of Health, through its secretary, soon closed the doors of the bogus institution. Then the charter for the Independent Medical College was used. The charter of the college was revoked some years ago. The same kind of "graduating" work was continued under the name of the Metropolitan Medical College, although a restraining order was issued in the State court against the officials doing business under this charter.

GENERAL.

Typhoid at Galveston.—Dr. Charles T. Peckham, Surgeon of the United States Marine Hospital Service, stationed at Galveston, who has been in charge of the Marine Hospital work since the storm, confirms the reports from Galveston that typhoid fever is raging on the island. He estimates that there are now between 400 and 500 cases in the city. He said: "I think the disease is directly traceable to the cistern water. We have two kinds of water, cistern and the Alta Loma water, which is piped some fifteen miles. A layer of mud was spread all over Galveston after the storm, which soon dried, and left a layer of the baked filth that had come up from the sewers and the drains. The wind blew the dust over the city and into the tops of the cisterns. In that way we think the disease originated."

Yellow Fever and Mosquitoes.—Press reports say that a number of experiments are being tried at Marianao to test the Finlay mosquito-yellow-fever theory. Soldiers are said to be sleeping in clothing used by infected patients, but are protecting themselves from mosquito bites. The reports thus far are said to be favorable.

Influenza in St. Petersburg.—The influenza epidemic in St. Petersburg is so severe that the mortality returns for the last week have been the highest for a decade. The disease has swept the city, and every office has vacant desks, and every

private table has or has had vacant chairs. The whole city has been swept. The weather is conducive to the spread of the disorder, being changeable, with snow and slush alternating.

Bubonic Plague in San Francisco.—In a report to Gov. Sayers December 20th, on the bubonic plague situation at San Francisco, State Health Officer W. F. Blunt says that the disease continues to spread there and that twenty-two cases are known to have occurred since March 6, 1900. He charges that the press and certain other interests in San Francisco are making strenuous efforts to suppress the fact of the existence of the disease there. He quotes Dr. J. J. Kinyoun, Federal Quarantine Officer at San Francisco, as reporting officially: "I would state that it is my belief that the area of infection is gradually growing wider, so that now there are only three blocks of the Chinese quarter proper in which there has not occurred since March last a case of plague. The conditions which will obtain in the next six months will be, in my opinion, conducive to a further spread of the disease. I believe other cases occurring in San Francisco are being reported under another name."

Illegal Practice in Virginia.—Great difficulty is experienced by the medical profession in the State of Virginia in preventing the illegal practice of medicine in that Commonwealth. The responsibility rests chiefly with the officers whose duty it is to enforce the laws on the subject. The offence of practising without a certificate from the Medical Examining Board of the State is a misdemeanor which can be prosecuted only before a Justice of the Peace. The Secretary of the State Board has publicly asserted that these magistrates, for the most part, do not sympathize with the law against unlicensed practitioners and hence that many well-founded prosecutions fail. All sorts of subterfuges are employed to evade the statute, as in the case of one quack who asserted that the charges which he made to his patients were not for his services as a doctor, but merely for the use of his horse and buggy. The Medical Society of Virginia is endeavoring to put an end to this state of things by securing an amendment to the existing law or its better enforcement.

Smallpox Situation in the United States.—During the fiscal year ended June 30, 1900, 14,998 cases of smallpox, with 731 deaths, in 44 States and Territories, were reported. The Surgeon-General reports that the disease has been of a mild character, the death-rate being less than 5 per cent. This disease is considered one which it is the duty of local authorities to suppress, but, following out the plan heretofore adopted by the Service, the assistance rendered to State and local boards of health has been by the distribution of publications and the detail of officers to make investigations, and personally to explain the methods to be adopted in the suppression of the disease in communities requesting such advice.

CORRESPONDENCE.

THE HALL OF FAME.

To the Editor of the MEDICAL NEWS:

DEAR SIR: Among the distinguished Americans already chosen for the Hall of Fame of New York University, physicians are conspicuous for their absence. Surely this is not because America has produced no physicians whose work would compare favorably with that of the men who have been selected. Perhaps it is because the physician is content to carry on his pain-destroying and life-saving efforts without having the same noised abroad, and himself applauded by the populace. Certainly he deserves all the more praise for displaying a modest, noble spirit.

It is too late to contend for a place among the first thirty Immortals, but we should see to it that the profession is represented among the next number of representatives chosen.

France has already honored her Pasteur and England her Simpson; why should not America honor Dr. Cranford W. Long, the discoverer of the pain-dispelling power of ether? All the more honor is due him since he made that discovery before Sir J. Y. Simpson discovered the similar property of chloroform.

A. JUDSON CHALKLEY, A.M.,
Miami Medical College.

Cincinnati, O., November 30, 1900.

THE NEW YORK STATE TUBERCULOSIS HOSPITAL.

To the Editor of the MEDICAL NEWS:

DEAR SIR: It is a cause for regret to the friends of the antituberculosis movement in the State of New York that difficulty should be encountered in the selection of a site for the first State Hospital. One would suppose that certain broad principles underlying the modern sanatorium treatment of this disease had been settled by the experience and discussion of the past fifty years. One would also suppose that these principles were universally applicable whether the sanatorium were located in England, Germany, or in the State of New York. No country in the world, so far as I know, has deliberately selected a site within one or two miles of a State prison and an asylum for insane convicts, as admirably suited to the treatment of tuberculosis. New York State is the first civilized community that is considering the advisability of taking such a step in the selection of Dannemora, Clinton County.

It would appear to me that such a step would be inexpedient, unless there were absolutely no other place available in the Adirondacks, to which region the Trustees are, by law, limited in their choice, or unless the spot selected with this incubus of an insane and convict population presented special climatic or other advantages. The first of these alternative suppositions may be dis-

missed because, as a matter of fact, the Trustees have inspected more than twenty other sites, any one of which would be possible. A recent visit to Dannemora, an inspection of the site offered at that place, conversation with the prison physician, a study of his plea made in favor of Dannemora, at the joint hearing before the State Board of Health and the Forest Preserve Commission, together with a study of the annual reports of the New York Weather Bureau, have convinced me that the second supposition may also be dismissed. A good deal of the medical evidence offered to prove the special advantages for this site has no bearing on the question, and would not appeal to a jury of physicians as entitling it to preference over other places. I refer especially to the pneumonia, typhoid, and tuberculosis statistics. The statistics of the mean temperature and the mean annual rainfall are at variance with the official reports of the Weather Bureau of the last ten years. The entire plea suggests the ease with which any place may be made to blossom out as a veritable Garden of Eden for the unfortunate consumptive, if sufficiently watered and fertilized by local enthusiasm and the imagination of its promoters. In spite of the cheerless and even depressing influence of the Dannemora surroundings, as compared with other places in theAdirondacks, nobody will deny that it offers some of the requirements laid down by the Trustees for the selection of a site; it has proper elevation, exposure, and water supply. Nor will anybody deny that incipient tuberculosis may be cured at Dannemora—or indeed at any place in the Adirondacks—still, no one would think of erecting a private sanatorium there, and it is the plain duty of the Trustees to act for their poorer fellow-citizens with the same discriminating judgment.

Let us not be blinded to the fact that the main arguments in favor of Dannemora are the gift of the land and the labor for the construction of the buildings. This is tempting bait. Yet it is to be hoped that the Trustees will not yield to it. The natural and commendatory desire on the part of the prison officials to secure labor for their convicts should not lead the Trustees to subordinate the interests of the consumptive poor to those of the convicts.

This is to be only the second State Hospital for incipient consumptives in this country, and upon its success may depend the fortunes of the whole movement in this and other States. Patients are to go there voluntarily, and much, perhaps all, depends upon getting them there early; there ought to be no prejudice in their minds against the place and its associations; no risks should be taken in the choice of site that would entail hesitancy on the part of the patient. Furthermore, be it remembered that the incipient consumptive is not a helpless invalid easily controlled through his very helplessness, but well enough to assert his own individual prejudices.

At some future time, when the movement in this State is itself no longer in the incipient stage and when the advantages of early sanatorium treatment of consumption have won their way into the hearts of our tenement-house population, the objections against Dannemora may weigh less in the balance, but for the present, at least, Dannemora ought to be eliminated from the list of available sites.

ALFRED MEYER, M.D.

801 Madison Avenue, New York, December 18, 1900.

OUR LONDON LETTER.

[From Our Special Correspondent.]

LONDON, December 15, 1900.

ESTABLISHMENT OF AN EPILEPTIC COLONY IN CHESHIRE—OPENING OF CANCER RESEARCH LABORATORIES AT THE MIDDLESEX HOSPITAL—MAJOR ROSS ON THE PREVENTION OF MALARIA.

PREPARATIONS for the establishment of an Epileptic Colony in Cheshire are making rapid progress. The scheme owes its existence to a munificent gift of $400,000 of the David Lewis Trustees. About 400 acres of land have been purchased at a pleasant and healthy site. The equipment will be on a generous scale and when the scheme is completed there will be no institution in England equal to it. The area of the buildings covers 3000 yards and the site is to be laid out in a beautiful park. The remainder of the estate will be available for recreation, and for gardening and farming pursuits, in which the inhabitants of the colony will employ a portion of their time. They will live in detached homes in the form of two-story dwellings, some accommodating twenty, others twenty-four, inmates. This arrangement possesses great advantages over the plan of one large residence for the whole of the patients and is a feature to be commended. There will also be an infirmary, a recreation hall, and workshops. It is estimated that the population of Manchester and Salford (for which this colony is principally available) comprises 1100 epileptics. Probably 300 will be accommodated. They will grow most of their own food, look after poultry and cattle and perform farm work in general.

The opening of cancer research laboratories marks a new departure at the Middlesex Hospital which it is hoped will assist in dealing with the disease which next to tuberculosis is the most fatal to mankind. The unsolved and apparently insoluble problem of the origin of cancer will be systematically attacked. There are special reasons why the work should be undertaken here. Of the great London hospitals, the Middlesex alone affords a refuge to inoperable cases of cancer and a handsome block of wards was completed early this year for the reception of those who can no longer hope for any further relief from the surgeon. Some sixty of these unfortunate patients are constantly within the walls. The duty of investigating the causation of cancer and thus laying the foundation-stone of its treatment was specially laid on the hospital by several

of its earlier benefactors. So long ago as 1791 the original founder of the cancer wards, Mr. Samuel Whitbread, gave the hospital the sum of £4000 with the specific instructions that the money should be applied to "the relief of persons affected with cancer and the investigation of a complaint which, though extremely common, is, both with regard to its natural history and cure, but imperfectly known." Throughout the century the wishes of the charitable founders have been carried out, but their hope has not been realized. The patients have received every possible help in alleviating their "dreadful disorder," but the cause remains unknown.

Major Ross, whose investigations in malaria are so well known, read a paper on "Malaria and Mosquitoes," at a meeting of the Society of Arts. He said he believed that it is chiefly in consequence of the disease that civilization does not progress in the tropics as in temperate climates. West Africa, a rich country within a few days' sail of England, is practically a wilderness. Our colonies are in fact cemeteries. He regretted that the British nation is making no serious effort to combat malaria. The hypothesis that malaria is caused by the bite of the Anopheles suits all the facts. Both occur in warm climates, prevail during summer and the rainy season, are connected with stagnant water and rank vegetation, attach themselves to valley and village, and are enormously prevalent in the poorer dwellings of natives. The time is now ripe for a movement against malaria. The prophylactic use of quinine, the use of mosquito nets and window screens, and the destruction of larvæ around the house, should be attended to in every malarious place. He still adheres to the method proposed by him to the Indian Government nearly two years ago—careful surface drainage. He has never said it would be possible to exterminate mosquitoes throughout Africa. He has always referred expressly to large towns.

TRANSACTIONS OF FOREIGN SOCIETIES.

French.

PENETRATING GUNSHOT WOUNDS OF THE CRANIUM—AMPUTATION OF GRITTI—OSTEOPLASTIC OPERATIONS AT THE KNEE—PULMONARY EMBOLISM AND ITS RELATION TO PHLEBITIS OF THE EXTREMITIES—BILIARY DIATHESIS AND HEPATISM.

WALTHER, at the Société de Chirurgie de Paris, Nov. 7, 1900, in behalf of Morestin reported the details of an observation of penetrating gunshot wound of the cranium, treated successfully by trephining, exploration and extraction of the bullet. The thirty-year-old patient, who had attempted suicide, presented three wounds in the right temporal region. One projectile had followed an entirely superficial course; another was lodged in the bony wall of the cranium from which it was readily disengaged; and the last had penetrated the skull. Notwithstanding the absence of cerebral signs, the skull was trephined, the torn dura mater lifted up and the bullet found with the probe at only a slight depth very fortunately. It was easily removed and prompt uncomplicated recovery followed.

REYNIER believed that Morestin was in duty bound to have made the exact diagnosis of penetration first of all, by means of the apparatus of Contremoulin, for instance. Not in every case does direct primary intervention result as happily as in this. For example, in a recent case of his own, by the method of Contremoulin he succeeded in locating in the right hemisphere near the surface a ball which had traversed the brain from the left side. It is self-evident how fruitless would have been all attempts at access to it from the side of penetration.

DELENS eighteen months ago had the following experience: A ball had penetrated the supra-orbital region; upon exploration with the probe it seemed to have passed upward and inward. Radiography, however, fixed its situation in the occipital region. From this he argued that in the presence of any penetrating gunshot wound of the skull, the surgeon should first of all resort to radioscopic examination before intervening in any other manner.

RECLUS added that it is absolutely necessary to do a primary exploration for the purpose of enlarging the bone wound, removing carefully spicules of bone, pieces of hat, hair and bullet, and other possible foreign substances carried in by the ball, of disinfecting and draining at least the mouth of the wound and membranes of the brain.

QUENU disagreed with all the preceding speakers by stating that in his experience and opinion the bullet is a dangerous foreign body usually septic. He therefore believes that to the primary interference advocated by Reclus should be added a gentle, but thorough, probing for the ball. The frequency with which it lies near the surface at the point of entrance makes immediate primary removal a safe rule, with the advantage of disinfection and drainage of the entire route it has taken.

TUFFIER, although he supported the diagnostic value of radioscopy in such cases, stated that even it might prove a dangerous disturbance of the patient in certain cases, because the changes of position, which are so material in order to obtain the proper views of the ball, might renew intracerebral hemorrhage. Consequently, he felt that all immediate molestation of the patient should be delayed for a short time.

POTHERAT, continuing the same subject, at the session of November 14th, detailed a case in which the cranium had been penetrated by a projectile of very small caliber. The conduct of the surgeon had been possibly too hesitating. In the month of December, 1899, he was called to see the victim of a hunting accident, who presented in the right temporal region three small wounds.

After being unconscious for four hours the patient recovered with imperfect speech; and a few days later suffered briefly from fever, right hemiplegia and aphasia. All were due no doubt to the cerebral lesion caused by the penetration of one of the shot. At the autopsy a perforation was found of one of the small shot through the base of the skull and an abscess over the convolution of Broca. The projectile was found only after filtration of the cerebral substance.

Lejars reported for Szczypiorski (Mont-Saint-Martin) three cases of the amputation of Gritti for traumatism of the leg. In the first patient a crushing accident had almost entirely detached the leg and primary amputation was resorted to. In the other cases the amputation was secondary. For one of these patients, also the victim of a crushing accident, he did the amputation at the site of election. Gangrene of the stump set in. In the other case he followed conservative therapeutic measures, but secondary hemorrhage, gangrene of the damaged member and abscess in the popliteal space appeared, which necessitated sacrificing the leg. The amputation of Gritti is little in favor in France, because it so often gives a stump upon which the patient cannot support himself. The cause of the difficulty is usually a secondary late displacement of the patella, which, by imperfect apposition at the time of operation, does not become firmly attached to the stump of the femur. On the other hand, many advantages are offered and usually obtained through the osteoplastic technic by which the sawn surface of the patella is at once fixed to the end of the femur. In these cases lasting adhesion between the two bones is usually established from the outset.

Merklen, at the Société Médicale des Hopitaux de Paris, November 9th, gave his observations on pulmonary embolism, secondary to phlebitis of the lower extremities. In his first case a puerperal phlebitis with embolism at the invasion, a long febrile state and later progressive involvement of both lower extremities resulted fatally within a few hours from asphyxia due to pulmonary embolism about twenty-three days after the appearance of venous symptoms. His second patient suffered death in the same way about five weeks after the onset of a phlebitis secondary to a large hematoma of the calf caused by a crush. Like his first patient, this one had early embolism in the veins with pulmonary congestion. The course of both was simple, but their outcome grave. A very moderate fever, manifested by an evening rise to only 37.8° C. and by a disturbed digestion, had been present at first and recurred eleven days before death. Emboli due to such phlebites during their onset are with rare exceptions benign, because they are due to the migration of clots, small, still friable and little adherent, developed in the venules. The late emboli on the contrary are grave and often mortal, because they consist of large coagulations separated from the thrombotic mass in a large venous trunk. Most authors attribute the majority of these emboli to the breaking off of the free extremity or center of the thrombus before this is completely organized. This explanation holds only if under some particular condition the process of organization is not perfect after the ordinary delay. There is another more rational hypothesis in the view of the author. These late emboli are more probably due to secondary, delayed exacerbations of the latent phlebitis in the large vein, followed by the formation of new large clots not immediately adherent and also easily movable like those of any phlebitis at its onset. Thus the pathogenesis of these late emboli is the same as of early emboli, because they are the simple result of practically a new inflammation of the veins which may manifest itself only with slight fever. In the treatment, therefore, it is necessary to take the temperature of patients most carefully during phlebitis and to insist on complete rest in bed for several weeks after absolute apyrexia. Only then may the affection of the veins be considered ended. This conclusion, moreover, conforms with the rule of Pinard, who keeps in bed for one month after the last elevation of temperature all cases of childbirth complicated with phlegmasia. The prognosis is generally favorable in phlebitis with early embolism, except in the latent affection of the large veins with late exacerbations, especially in light prolonged infections, in virtue of their evident effect in causing mortal emboli. The real method of such clot mobility is as little understood as the formation of the clot itself within the vein. It is hardly likely that a clot once adherent to the wall of the vein, organized and contracted, should become detached. The hypothesis of new formations upon it and their migration is much more probable. In literature the thesis of De Brun states that the latest appearance of such an embolism was three months after the formation of the thrombosis. Unfortunately, nothing is said by this author as to the presence or absence of a latent phlebitis during this long interval. Phlegmasia of childbirth is most apt to cause the precocious benign embolism, but is singularly unlikely to initiate fatality in this way, since Pinard has found but four such cases in ten years at the clinic in Baudelocque. A valuable distinction, if it were practicable clinically, would be one between resolving and obliterating phlebitis.

Rendu disagreed with the hypothesis of the cause of these late emboli. Admitting their usual gravity, he said, they are due to fragments of the original thrombotic mass which begins to disintegrate about three weeks after the beginning of symptoms.

Triboulet felt that the most important point to establish is, in view of their prognosis, a distinction clinically between embolism precocious, apyretic, without apparent phlebitis, often present at about the eighth day after childbirth and usually of a favorable termination, on the one hand,

and, on the other hand, phlebitis with fever, successive exacerbations, various degrees of infectiousness and very commonly with fatal issue from migrating clots.

LAUNOIS called attention to the researches of Cornil as to the histology of such thrombotic masses. After a variable time he found that they are invaded by embryonal connective tissue cells, which proceed from the wall of the vein, interlace, and form a network entangling in its meshes the different elements of the clot into a compact mass, thus obliterating more or less completely the lumen of the vessel. One understands, therefore, the persistence of edema for a long time after the cure of the phlebitis. Very commonly this late edema is due, not only to alterations in the venous and lymphatic circulation, but also to local trophic changes.

BARTH said that sometimes there exists merely gross obstruction of the vein and sometimes organization of the clot, by the process discovered by Cornil. The subsequent history of these cases makes it likely that when edema persists this condition obtains.

HALLOPEAU reported a case of late fatal embolism six months after the original phlebitis.

VAQUEZ, at the session of November 16th, resumed the same subject and advanced the following theory: The so-called precocious emboli are due to the disintegration of a clot which in its essence, according to Cornil and Marie, has little tendency toward organization, belonging really to that phase of phlebitis which one might call the *preobliterating period*, but often going on to the existence of a *latent phlebitis with embolism*. Such precocious emboli are always small fragments, therefore rarely dangerous unless infectious. On the other hand, the late emboli are large masses of clot floating about, detached because originally their adhesion to the venous wall was insufficient, and often deadly from their size alone. Unfortunately, this exact anatomopathological classification cannot be clinically distinguished. In fact, it may be that, through successive attacks of phlebitis, precocious benign fragmentary emboli form in fifteen, twenty, thirty days or even later, while, on the other hand, an embolic mass may coincide with a total obliteration of the vessel only a few days after the appearance of the phlebitis. His own rule in treating these cases is the following: Stiffness of joints and atrophy of muscles, with later contractures, may follow too prolonged immobilization; therefore, to avoid these untoward consequences, for only three weeks after the onset of phlebitis in the large veins of the inferior extremity, especially if bilateral, is absolute immobilization carried out by some of the well-known gutter-splints. After this time, if the large trunks have ceased to be tender, if there have been no rises of temperature, and if the edema is frankly decreasing, he carries out maneuvers aimed to favor the collateral venous circulation and consisting only in superficial effleurage of the skin and in partial passive movements of the toes and foot. Later, at the twenty-seventh to the thirty-fifth day, the muscles are massaged, the joints more actively moved and the venous trunks left as far as possible undisturbed. The patient is allowed to move about in bed a little, but not to flex his trunk. Following the thirty-fifth day this treatment becomes gradually more and more pronounced, the patient is allowed to lift himself in bed and, finally, to get up out of it; he is not allowed to use elastic stockings or supports of any kind. A light gauze bandage may, however, be applied. Complete cure is usually present by the fiftieth day under this management. If relapses occur, characterized by elevation of temperature, local tenderness and recrudescence of the edema, he resorts immediately to the same processes *seriatim*, beginning with the immobilization. Replying to an inquiry from Merklen as to the usual status of the solid clot causing the late massive emboli, he stated that commonly sufficient adhesion occurs between the wall of the vessel and the mass. It is precisely when such are not formed at all, or imperfectly, that separation transpires. However complete relief of obstruction of the vein in this period, as claimed by Rendu in the last session, is uncommon. When edema promptly disappears it is due to the fact that collateral circulation, at first impaired, is restored, rather than to the fact that the main channel is partially or entirely opened.

GLENARD read notes on cases, occurring during the past ten years, of the so-called hepatism of Gilbert and Lereboullet, described by them in the last session. These included various states of dyspepsia, chlorosis, etc. All were apparently of hepatic origin, yielding to appropriate treatment of the liver, and assignable to the category of these two authors as expressions of biliary diathesis or hepatism.

SOCIETY PROCEEDINGS.

NEW YORK COUNTY MEDICAL ASSOCIATION.

Stated Meeting, Held November 19, 1900.

The President, Parker Syms, M.D., in the Chair.

General Septic Peritonitis.—Dr. Irving S. Haynes said that for the diagnosis of septic peritonitis the quality of the pulse is of more importance than its frequency. At the beginning the pulse is apt to be thin, thready, distant, easily compressible, and the arteries easily emptied under the finger. The reason for this is that the blood of the system is gathered to a large extent in the dilated blood-vessels of the abdomen. The intense inflammatory reaction leads to a reflex relaxation of all blood-vessel in the abdominal cavity and these are capable of containing, when dilated, most of the blood of the body. Only later in the peritonitis does the hard, wiry pulse usually

set down as characteristic of peritonitis develop. When all cases of peritonitis were inevitably fatal this character of the pulse preceding the fatal termination was a pathognomonic sign of the condition. Patients with peritonitis, seen early enough for operation and recovery, in Dr. Haynes' experience, had an average pulse-rate not much above a hundred. In a series of fatal cases the pulse-rate averaged 130. In cases of localized peritonitis or inflammation of the intestine the hard wiry pulse considered pathognomonic of peritonitis by the older physicians frequently occurred. Its prognostic significance is not as absolutely unfavorable as it was formerly thought.

Fever.—As a rule the fever of peritonitis does not run very high. General septic peritonitis may occasion a rise of temperature to 102° F. It may not run above 101° F. The average is rather under than over 103° F. and only exceptionally does a temperature of 104° F. occur. Of more diagnostic and prognostic significance than either the pulse or the temperature is the appearance of the patient. The face is drawn and frightened-looking, even though the patient may not feel fear. There is a tenseness about every muscle that reminds one of the corresponding condition in the abdominal muscles. It is as if the whole system realized the danger and used the ordinary modes of expression to make clear its unconscious feeling of danger.

Prognosis.—General peritonitis patients always die if not operated upon; they may die even after operation. It is well worth the while to give then the only chance for their life no matter how unpromising the condition. If the operation can be performed on the average not longer than four hours after the development of the peritonitis the prognosis is good. In Dr. Haynes' experience recoveries have taken place only in patients who were operated on in from two to seven hours after the onset of symptoms. Some patients were operated on when symptoms had existed longer than this, but they invariably died. Should apparently moribund patients be operated on? Many surgeons refuse to operate under such conditions, because, they argue, it serves no good purpose, only creates prejudice against abdominal surgery and makes the statistics of these operations appear worse than they really are. It is not easy to decide, however, just when a case passes from the operable into the inoperable stage of the disease. The patient will surely die without an operation, but he may survive even if desperately ill if operated upon. Dr. Haynes recently performed an operation contrary to the advice of two consultants, who considered the case hopeless, and to the surprise of all recovery took place.

Early Diagnosis and Statistics.—The important condition for success in the operation is early diagnosis of peritonitis. The first symptoms are pain in the abdomen which is sudden, continuous and then spreading, followed by collapse and the symptoms of shock. When these symptoms occur it is not only useless but criminal to delay. The patient's only hope lies in operation and the sooner this is done the more are the chances of recovery. Forty-six per cent. of Dr. Haynes' cases recovered. At least three of the fatal cases, however, were operated on at a time when hope was practically out of the question. One of the cases had been suffering from peritonitis, due to a ruptured peritoneal ulcer, for twenty-seven hours when the operation was done. In another the symptoms had persisted for twenty-four hours and the peritonitis was caused by a rupture of the intestine through a cancerous ulcer. In a third fatal case rupture of the appendix occurred the day before the operation was undertaken.

Technic.—One of the most important considerations with regard to operation for peritonitis is the location of the incision. If it is suspected that rupture of the stomach or of the appendix has occurred, of course, the position of the incision would be fixed by this fact. If, however, there are no localizing symptoms, the incision should be made in the median line just below the umbilicus. This incision can be enlarged upward or downward as may be necessary. In penetrating wounds of the abdomen followed by peritonitis the original wound should be enlarged. After the incision is made and the peritoneum has been opened the character of the exudate in the peritoneum will furnish information as to the point of origin of the peritonitis. If particles of food are seen, there has been a rupture of the stomach or duodenum. If the pus has a distinctly fecal odor, there has probably been a rupture of the appendix. If there is bile in the peritoneal cavity, it points to a pathological condition of the bile-tract, while if in females the pus wells up from the pelvis, yet has no fecal odor, rupture of a pus tube is the lesion.

Abdominal Flushing.—The abdomen should be thoroughly flushed out with normal salt solution. The tube that conveys the solution into the abdominal cavity should be carried to every part of the peritoneal cavity. This should be done before looking for the lesion. Sponging has been recommended, but it is too slow and not every part of the peritoneal cavity can be thus reached. If the sponge is not used very gently or if it is at all rough in texture, the delicate peritoneal covering of the intestine is injured and adhesions will form. Evisceration acts on the patient as would a blow on the solar plexus. The resulting shock is serious, persistent and is felt at once. If the intestinal coils are much distended an incision should be made in them at a point opposite the mesenteric attachment. As the gas escapes from them care should be taken that none of the intestinal contents find their way into the abdominal cavity. Hydrogen peroxide in full strength may be used without danger in the abdominal cavity. Its use, however, does not seem advisable. Flushing appears to be the best way of cleaning the soiled peritoneum.

Drainage.—The best form of drainage is iodoform gauze wrapped in rubber tissue, which pre-

vents adhesions and facilitates the changing of the dressing. If the purulent material within the abdomen is thick, a tube should be used as well as the wick of gauze. If the gauze is left long enough to hang down somewhat at the patient's side, it assists in the removal of purulent matter. The dressing should be frequently changed. Some operators prefer, if possible, to close up the abdomen, but this seems inadvisable, because it adds to the risk. Where drainage is used, the abdominal wall will subsequently be weaker than before and a hernia may occur. But a ventral hernia in a living subject is capable of cure. "A beautifully sutured wound in a corpse availeth nothing."

Stimulation During Operation.—Strychnine is very valuable. Care must be taken, however, not to overstimulate. The idea is not to overexcite a weakened organism, nor to whip a frail one into efforts beyond its power, but to lift up the tottering forces. Whiskey may be given almost *ad libitum* with a hypodermic syringe. It takes many a syringeful to affect the ordinarily healthy individual, and still more is needed to favorably affect a weakened patient suffering from an intense toxemia. When the heart is weak the stimulating effect of frequent swallowing must not be forgotten. Spoonfuls of water should be given occasionally and the reflex improvement of the heart's condition through the vagus reflexes will soon be noticed.

Varieties of Septic Peritonitis.—In discussion Dr. Dowd said that septic peritonitis is no longer considered to be the necessarily fatal disease that it was thought. For any instructive consideration of the mortality, its forms must be taken into account. In a certain number of the patients, while there is undoubtedly an inflammatory tendency in the peritoneum, true pus is not present, but only serum. In a second severe type seropus is present. Sometimes this is true, thin pus, in which case the peritonitis is only mild. Some surgeons speak of it as cloudy serum. This frequently produces a decided febrile reaction, but the inflammation is not of a virulent character. In either of these forms of peritonitis a large number of successes follow operation. In a third variety of peritonitis thick pus occurs with shreds of fibrin on the peritoneal surface of the intestine and here and there shut in abscesses. These cases very seldom recover, no matter how thoroughly drained or cleansed. In a certain number of cases there may be thick pus at the site of the original infection and cloudy serum or simple serum in the peritoneal cavity. Most of these cases get well after simple drainage of the original abscess. For true septic peritonitis, however, the best treatment is undoubtedly hot saline solutions used abundantly and as far as possible carried to all parts of the abdomen. During the last ten years we have learned to respect the peritoneum and now realize that there is much less necessity for drainage than was formerly thought. If the abdominal cavity can be thoroughly washed out, peristalsis encouraged and perhaps some portion, at least, of the intestinal contents removed in these cases, there seems no doubt that there will be a decided improvement in the statistics of operation for septic peritonitis.

Character of Infection.—Dr. Benjamin T. Tilton said that many of the cases successfully operated on are true generalized peritonitis, but consist of a series of pus foci here and there, many of the coils of the intestine not being bathed in pus, however. In virulent general peritonitis it is probably impossible to save the patient. Any sign of reaction on the part of the peritoneum against the infection is encouraging and good results will sometimes occur even in most unpromising cases. The hope for the future of peritonitic surgery lies in getting the cases earlier from the general practitioner. The dry method of cleansing the intestine by sponging is of little practical value. Bacteria are left in the peritoneal cavity and injury is inflicted on the intestine by the fiber of even the finest sponge. Drainage should not be depended on as the only hope, but the peritoneum should be trusted more than has been the custom.

Dr. Brothers said that the question of raising the foot of the bed for heart stimulation is important, but it must be remembered that drainage of the peritoneum may be even more important and this can be best accomplished often by raising the head of the bed. As to the relative merits of sponging or flushing, if there is an especially virulent focus of infection, as in wounds of the intestines, this should not be scattered all over the peritoneal cavity by flushing, but local cleansing by sponging will be safest. Only when there is surely generalized peritonitis should flushing of the peritoneal cavity be employed.

Dr. Erdmann said that he has limited the use of flushing more and more of late and has been very well satisfied with the results. There is serious danger that the salt solution will carry infective material beyond the limits of infection at the moment and so prove dangerous. In one case where he employed flushing for peritonitis after a wound in the stomach, the patient died two days later and some spaghetti was found in the lesser peritoneal cavity. Whether this had been carried in by the flushing could not be determined. The anatomical relations of the foramen of Winslow, however, are such that this accident must always be considered possible.

Hot Vaginal Douche.—Dr. James Hawley Burtenshaw said that hot water has been used for pelvic affections almost from time immemorial, yet nothing is less understood than the proper principle on which it should be employed. The abuse of it may do infinite harm. Hot water first dilates and causes congestion. As Dr. Goodell used to say, if a finger be plunged for five minutes into water as hot as can be borne it becomes red and swollen. It would be impossible to remove a ring that slipped off the finger rather easily before. After fifteen minutes, however, the tissues of the finger shrivel and become pale. The second effect is the one sought for when

vaginal douches are employed. On this principle two quarts of water which flow from an ordinary fountain syringe placed three feet above the patient and which will take by actual experiment two minutes to flow will do harm rather than good. It adds to the congestion, intead of relieving it. Four quarts are scarcely better. At least three gallons of water should be used and it should be allowed to flow into the vagina for about fifteen minutes.

Vaginal Douche Technic.—The patient should be instructed to lie flat on her back with hips slightly elevated and the shoulders low. A large douche vessel or a pail of water from which the water flows by siphon action should be employed. The water should be as hot as can be borne and should be at least 107° F. The douche should be taken every day except for the two days before and after menstruation. If the patient has not proper arrangements for taking the douche in bed it may be taken in a bathtub, a Y-tube being used to connect both the faucets and so have the water constantly of the desired temperature. In order to raise the patient's hips a couple of bricks covered with oilcloth or a roll of blanket which will prevent the water from flowing up around the rest of the body should be employed. Dispensary patients are recommended to put two boards over a washtub slightly separated from one another, so as to allow the water after use to flow into the tub.

Indications for the Douche.—All of the congestive conditions of the pelvic organs are benefited by the hot douche. Acute and chronic nephritis, perimetritis, parametritis, ovarian pain subinvolution and leucorrhea. As a rule, the douche should be used without the addition of medicaments. For leucorrhea the following prescription is given:

℞ Alum .....
Zinc sulphate.....
Sodium biborate.....
Carbolic acid.....aa. ʒ j
Water .....ad. ʒ viii

A tablespoonful of this should be added to the last quart of the douche. Bicarbonate of soda, one level teaspoonful to each quart of water, will often be found a useful remedy for milder cases of leucorrhea. As a rule antiseptics should not be used. They are poisonous to the general system and as the result of the macerating action of the large douches much more of these substances are absorbed than might be anticipated. In mucopurulent discharges dilute wood vinegar will sometimes be found of service. Large vaginal injections, it has been demonstrated, reduce the bactericidal power of the fluids of the vagina. They should not be used during pregnancy. It has been recently suggested that a large rectal douche as hot as can be borne and retained as long as possible affects more of the tissues of the pelvis than even the vaginal douche. They are, however, very annoying to patients and the rectum does not stand hot water well.

Constant Douche Temperature.—Dr. J. Riddle Goffe said that an arrangement by which the water for the douche could be taken directly from the hot water faucet is preferable. In this way a constant temperature is secured and the effect is surer. In a douche apparatus the water has time to cool considerably during the fifteen minutes the douching should last. After operations in the vagina the practice of giving a large hot douche undoubtedly does harm. The tissues are made anemic, their vitality is diminished and failure to unite will frequently occur. In undeveloped uteri the effect of the douche is not to produce congestion or stasis of the blood, but stimulation of the uterine circulation. For this purpose large injections are very important.

Douche Contra-Indications.— Dr. F. P. Hammond said that it was the length of time a douche lasted, not the quantity of water used, that should be regulated. With a small perforation of the nozzle of the vaginal syringe a small quantity of water could be made to serve every purpose of the large douche. Anemia constitutes a serious contra-indication to the use of the large vaginal douche, especially if it is accompanied by headache. The excess of blood invited to the pelvis may cause sleeplessness or even collapse. One-fourth to one-third of the blood in the circulation may be drawn to the pelvic tissues and this the anemic cannot stand. Acute salpingitis constitutes another contra-indication, because the warmth and congestion stimulate bacterial growth. Endometritis fungosa or adenosa also contra-indicates the douche, because stimulation is very undesirable in this condition.

BOOK REVIEWS.

Atlas and Epitome of Gynecology. By Dr. OSKAR SCHAEFFER, Privat Docent of Obstetrics and Gynecology in the University of Heidelberg. Authorized Translation from the Second Revised and Enlarged German Edition. Edited by RICHARD C. NORRIS, A.M., M.D., Surgeon-in-Charge Preston Retreat, Philadelphia; Gynecologist to the Methodist Episcopal Hospital and to the Philadelphia Hospital, etc. With 207 Colored Illustrations on 90 Plates and 62 Illustrations in the Text. Philadelphia: W. B. Saunders & Company, 1900.

THIS is a notable addition to the excellent series of hand atlases introduced into this country by the same publisher. Two distinct works really are embodied in the compass of the one book, the set of beautiful reproductions in colors of the original water-color drawings made in the Heidelberg clinic with their descriptive and elucidating text, and a concise exposition of the pathology, diagnosis and treatment of all the commoner gynecological diseases. This latter section is written from a strictly practical standpoint, the more purely theoretical considerations with microscopical and chemical notes being contained in the portion relative to the drawings.

While written by a surgeon the book is a strong plea for conservatism in treatment, an advantage, however, to the general practitioner whose aim is usually in this direction and who will find many useful plans of non-operative therapeusis outlined. For assistance in diagnosis the author has embodied an abundance of differential tables and a large number of colored diagrams give a clear idea of the significance of the various findings obtained by bimanual examination, the sound, etc. The colored plates adequately cover the field and represent all the lesions likely to fall into the hands of the non-specialist and also many of the rarer disorders, while enough cannot be said in praise of their beauty of execution, which is nothing short of marvelous in a book of such moderate price. We know of no other book that from a practical standpoint contains so much useful information on the subject as this one, and cannot recommend it too highly either for students or practitioners.

Diseases of the Chest, Throat and Nasal Cavities, Including Physical Diagnosis and Diseases of the Lungs, Mediastinum, Heart and Aorta, Laryngology and Diseases of the Larynx, Pharynx and Nose and Special Diseases of the Thyroid Gland and Oesophagus. By E. FLETCHER INGALS, A.M., M.D., Professor of the Diseases of the Chest, Throat and Nose, Rush Medical College (in affiliation with the University of Chicago); Professor of Rhinology and Laryngology, Chicago Polyclinic, Laryngologist to the St. Joseph's Hospital and to the Presbyterian Hospital, etc. Fourth Edition. With Two Hundred and Fifty-Five Illustrations. New York: William Wood & Co., 1900.

WHILE not in the least deprecating the constantly-growing tendency to specialism or in any way underestimating the benefits accruing from the division of labor that the present breadth of medical science has rendered almost imperative, one cannot help but wonder sometimes what the final result is going to be. The principle is being carried so far, there are wheels within wheels and specialists in specialties with so meticulous a subdivision of knowledge and skill, and subspecialty is being saddled upon specialty with such frequency that the analogy of the lesser fleas upon the little fleas seems painfully lifelike and one trembles for the ultimate *reductio ad absurdum* which apparently is not wholly a danger too remote to be dreaded. And, as a natural sequence of this endless multiplication of interests, comes a corresponding increase in the literature of the science which has been pouring out during the last few years at a geometrical ratio of progression appalling to contemplate. But, in spite of this making of books which is without end, most of them can find but a limited class of readers and by reason of their ultratechnicality are unfit for the every-day usage of the busy general practitioner. It is therefore with unwonted pleasure that one speaks of so thoroughly practical and useful a book as that under discussion. It is the work of a specialist, but a specialist in the broader sense who has known how to broaden his field and consider not the disorders of a single organ or function, but a large and comprehensive group of diseases which are, however, topographically and physiologically so intimately related that they form a closed circle that must be dealt with in its entirety to be satisfactorily handled. Of the specific merits of the book itself it is hardly necessary to speak in detail, the prominence of its author and the fact that this is its fourth edition sufficiently guarantee its value. Such changes as progress in medicine has demanded have been made and new matter and illustrations added, so that the work can in every way be recommended to the practitioner as affording reliable and modern information on the very complex subjects of the etiology, diagnosis and treatment of the lesions of the heart and respiratory system.

Rhinology, Laryngology and Otology and Their Significance in General Medicine. By E. P. FRIEDRICH, M.D., Privat Docent at the University of Leipzig. Authorized Translation from the German, Edited by H. Holbrook Curtis, M.D., of New York. Philadelphia and London: W. B. Saunders & Company, 1900.

IN recent years the realization has gradually come that the laryngologist, rhinologist or otologist can only be successful in his chosen profession when he appreciates how much pathological changes in these special organs are dependent on diseased conditions of the general system. On the other hand, the general practitioner has learned that preliminary and pathognomonic symptoms of many constitutional affections are often to be found in the throat, nose and ear. Dr. Friedrich's book presents itself at once as an index of these feelings and as an auxiliary to further mutual helpfulness on the part of specialism and general practice for the diagnosis of general systemic conditions and local symptoms in the upper respiratory tract. The subject is, of course, a very large one, and even Dr. Friedrich's 315 pages fail to do more than treat the salient points. In fact, there is in the book a sense of the compression that has been exercised in making it and one would wish for more detailed information on certain points.

As a rule, the treatment of the subjects selected is at once interesting and suggestive. We are especially glad to notice that American literature has not been neglected in making the book. Some of the articles, as, for instance, that on ictus laryngis occurring in the course of obesity, gout and diabetes, will furnish new matter for thought to most general practitioners. The laryngeal affections of typhoid and scarlet fever and the aural complications of influenza are notably well done. The chapters on affections of the larynx, nose, pharynx and internal ear in nervous diseases are worthy of attentive study in our day when nervous diseases are occupying so much of general attention.

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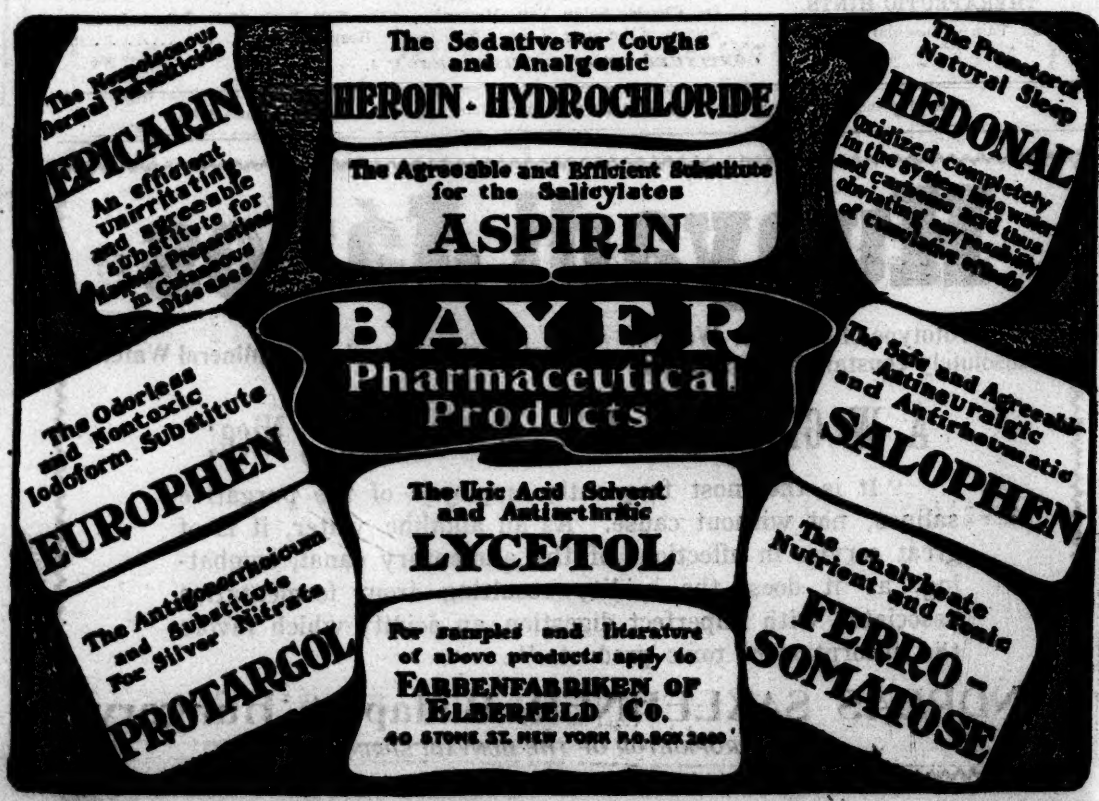
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A WRITTEN examination for the position of interne will be held at the State Hospital for the Insane, Morris Plains, N. J., on Wednesday, January 16, 1901, at 10.30 A.M. Subjects for examination: Anatomy, Physiology, Materia Medica and Therapeutics, Obstetrics, Practice, Surgery, Gynecology, Nervous and Mental Diseases.

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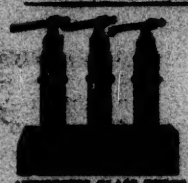

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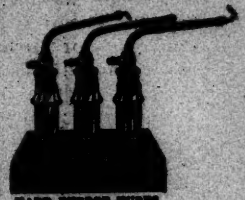

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Medical Echoes.

Bubonic Plague Death Roll.—Lord Curzon of Kedleston, the Viceroy of India, in the course of a speech Tuesday, said that since the appearance of the bubonic plague in 1898 twenty-five thousand deaths from the disease had occurred in the Mysore State.

Mysore, according to the census of 1891, had a population of nearly 4,850,000. This gives a rate of deaths from bubonic plague of a little over five per thousand of the population.

The Physician and the Whisker.—Doctors have very much less latitude in the matter of facial decoration than men of any other profession, because it seems to be taken as a settled fact that they must wear only beards. "I happen to have a great many doctors under my care," said the barber whose name is known to more New Yorkers than any other, "and all of them excepting two wear beards. These two are both over fifty, and they allow themselves the luxury of gray mustaches. Most of the others are men between thirty and forty, and I don't believe there is one of them who wears a beard from choice. Some of them would very much like to be smooth-faced, while others look with envy at the men able to wear only a mustache. They also say that professional reasons compel them to wear beards. Youthfulness in a doctor seems to be more of a disadvantage than in any other profession. One hears a great deal of gray-haired men having to dye their hair and mustaches if they want to find work. But it is just as true that men are compelled to adopt some device to make them look older when youthfulness is a disadvantage. For that reason all my doctor clients have to wear beards whether these are becoming to them or not."

Bullet in Heart Four Years.—A Chicago newspaper of Wednesday says: "Proof that a man may live with a bullet in his heart was afforded yesterday by the use of the X-ray upon Charles B. Nelson, of Cadillac, Mich., formerly a Chicagoan, who was in 1896 the central figure in a sensational shooting which nearly resulted in his death.

"Under the X-ray the ball in Nelson's heart could be plainly seen rising and falling with each pulsation of the vital organ. The bullet had been there since the night of July 11, 1896.

"Mysterious circumstances surrounding the shooting of Nelson made it one of the sensational episodes in the history of Chicago. On the night of the shooting Mr. Nelson was in company with Miss Margaret Staples in Washington Park. A negro did the shooting, afterward escaping, and the mystery surrounding the affair was never cleared."

Salt and the Heart Tissue.—Experiments on turtles have convinced Dr. Jacques Loeb and

Professor G. J. Lingle, physiologists at the University of Chicago, that common salt in the blood makes the heart beat, and may cause the heart to beat again after it has once stopped.

Dr. Loeb and Professor Lingle for several months have been conducting a series of delicate scientific tests bearing upon the pulsation of the heart.

In the experimental work turtles were used almost exclusively. After snipping off the head of one in as humane a way as possible, the lower part of the shell was removed and the heart taken. A small strip from one of the ventricles was used, the blood was removed, and the piece of flesh was suspended in different solutions.

The early belief that the heart beats because it is full of blood was quickly abandoned when a strip of turtle's heart was suspended in a solution of sodium chloride, and a regular series of beats began. Theories of Professor J. H. Hall, of the University of Michigan, that the proteoids in the blood caused the beating, and of Professor Wringer, of Johns Hopkins University, that nerve action causes the pulsations, were thoroughly tested and abandoned.

Separated from all nerve connections, the lifeless strip of heart muscle responded perfectly to the presence of the salty solution.

Experiments were made to ascertain what qualities salt possessed to cause rhythmic pulsations that were not possessed by calcium or potassium, which enter into the composition of the blood. They discovered that a pure sodium chloride solution was destructive of heart tissues, but that by mixing calcium and potassium solutions the poisonous effects were destroyed. The secret lay in the peculiar character of the sodium ions.

"It was found," said Professor Lingle, "that strips of ventricle, when placed in a solution of cane sugar, did not beat rhythmically.

"Next I obtained a sample of crystalline dextrose. Strips of ventricle, when placed in it, did not beat rhythmically, nor would they make even single contractions.

"When strips of ventricle were placed in a solution of glycerin no contractions occurred. The glycerin solution, however, has a different effect on heart tissue than either cane sugar or dextrose, as it tends to injure the tissue.

"Next the action of sodium, calcium and potassium ions on ventricles was tried. When strips of non-beating ventricle were placed in a solution of sodium chloride they always beat rhythmically. In a large number of experiments during the whole year not one failure to start beats was recorded.

"When calcium chloride instead of sodium chloride is used, however, I find that it does not start contractions in heart strips. It can, however, stop contractions in strips that are active. The third test, when potassium chloride solution is used, shows that no contractions occur."

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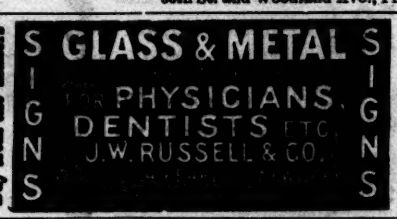

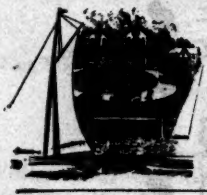

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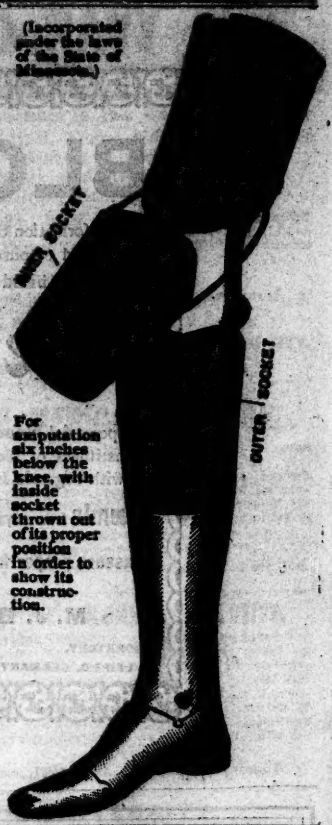

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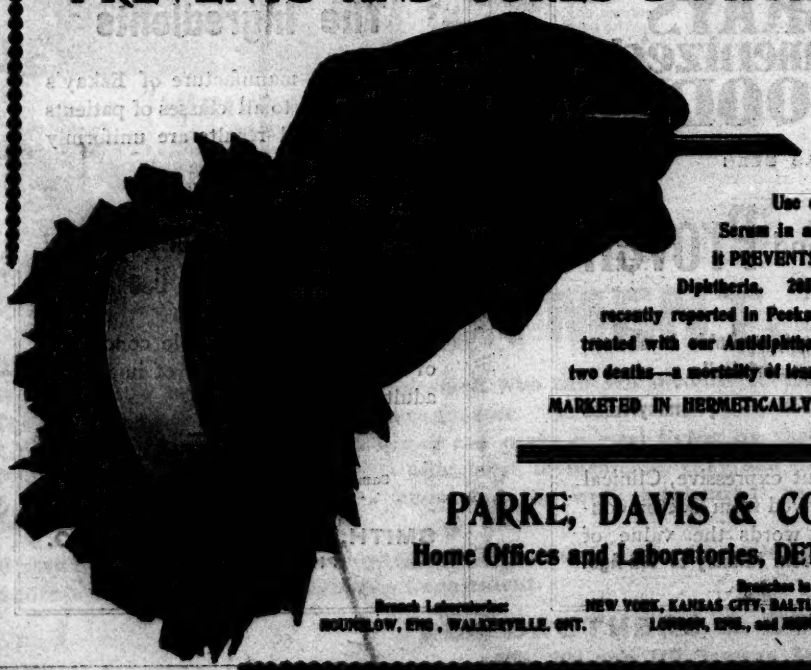

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